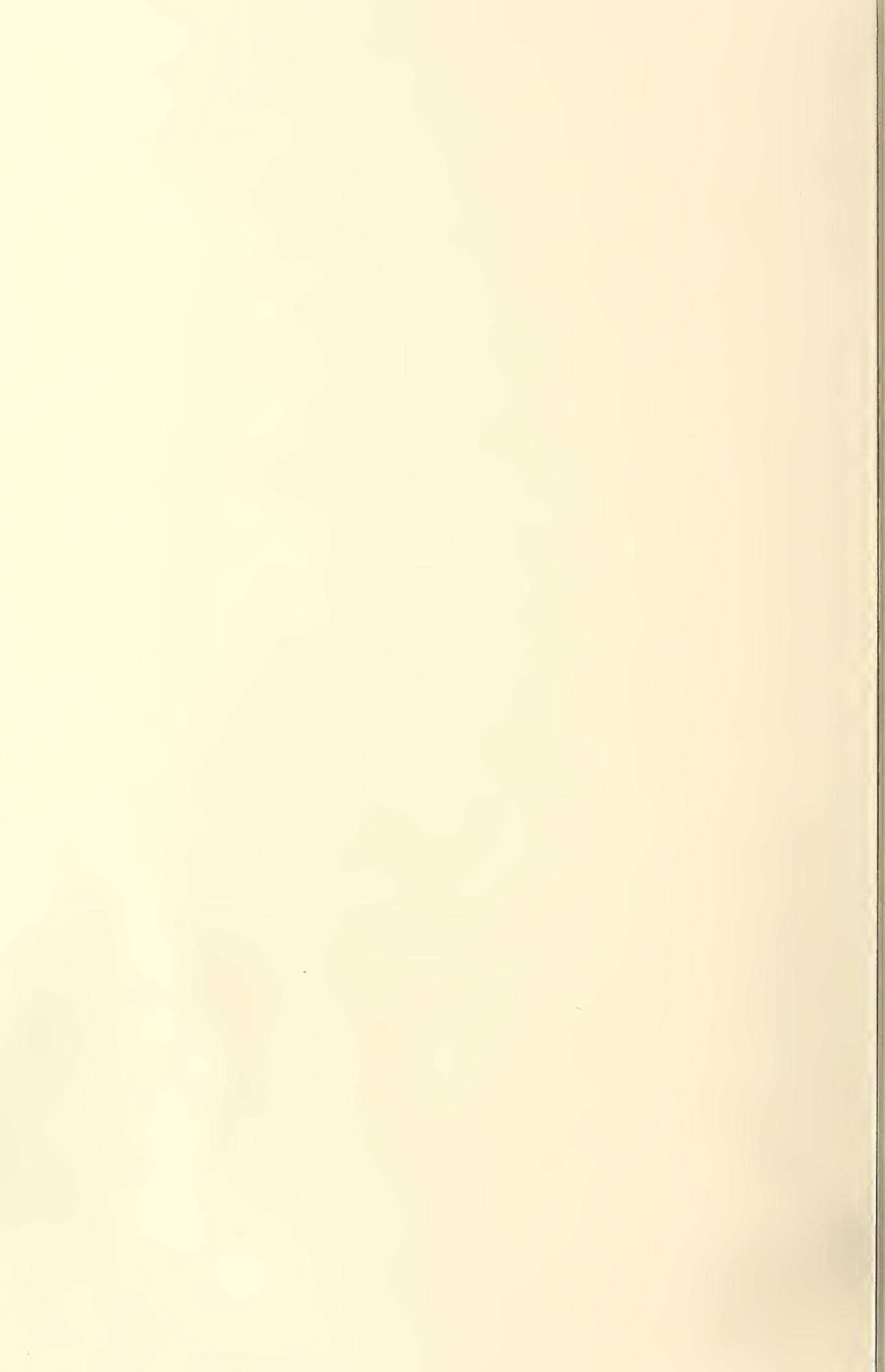


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HARD RED SPRING WHEAT



QUALITY REPORT

Physical, Chemical, Milling, and Baking Characteristics

1967 CROP

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION



247841

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Crops Research Division

Preliminary Report Not For Publication^{1/}

REPORT OF PHYSICAL, CHEMICAL, MILLING, AND BAKING EXPERIMENTS

WITH HARD RED SPRING WHEAT

1967 CROP^{2/}

by

W. C. Shuey, Research Technologist; Vernon Youngs, Research Chemist;
R. D. Crawford, R. D. Maneval, D. J. Thompson, and N. B. Lofthus,
Technicians, Crops Research Division, Agricultural Research Service.

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1/ This is a progress report of cooperative investigations containing data, the interpretation of which may be modified with additional experimentation. Therefore, publication, display, or distribution of any data or any statements herein should not be made without prior written approval of the Crops Research Division, Agricultural Research Service, United States Department of Agriculture and the cooperating agency or agencies concerned.

2/ Investigations of the Crops Research Division, Agricultural Research Service, in cooperation with the North Dakota Agricultural Experiment Station. The samples were obtained from the cooperative experiments with the State Agricultural Experiment Stations in the spring wheat region.

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COOPERATING AGENCIES, STATIONS, AND PERSONNEL

The cooperating agencies and stations conducting the varietal plot and nursery experiments from which the 1967 spring wheat samples were received are listed below:

Colorado Agricultural Experiment Station:

Center and Fort Collins.

Minnesota Agricultural Experiment Station:

Crookston, Morris, St. Paul, and Waseca.

Montana Agricultural Experiment Station:

Bozeman, Dutton, Havre, and Sidney.

North Dakota Agricultural Experiment Station:

Carrington, Dickinson, Fargo, Langdon, Minot, and Williston.

South Dakota Agricultural Experiment Station:

Highmore and Watertown.

Wisconsin Agricultural Experiment Station:

Madison.

Wyoming Agricultural Experiment Station:

Laramie and Sheridan.

A complete list of all cooperating agencies, stations, and personnel for the year will be found in the report by Dr. K. L. Lebsock, "Results on Spring Wheat Varieties Grown in Cooperative Plot and Nursery Experiments in the Spring Wheat Region in 1967."



INTRODUCTION

Samples of standard varieties and many of the new strains of hard red spring wheat grown in cooperative experiments in the spring wheat region of the United States^{3/} have been milled each year by the USDA. The flours were assayed chemically and physically and baked into bread to determine the quality characteristics. The purpose of this report is to make available to the cooperators, quality data on the standard varieties and new strains of hard red spring wheat from the 1967 crop.

The same general format and techniques were used in evaluating the wheats as outlined in quality reports for previous years. The data contained in this report are comparable to data in past reports and, where applicable, average results and also the average results of the 1966 crop are compared.

The format adopted in 1962 shows an evaluation of the samples in three categories: kernel characteristics, milling performance, and baking evaluation. For the sake of brevity, only the apparent deficiencies or outstanding characteristics for the varieties are given. An additional column, General Evaluation, on the tables indicating the Uniform Regional Nursery Averages and Sawfly Yield Nursery Averages, gives the overall performance of the variety for the samples submitted. It is hoped that with the use of this format one can quickly ascertain the various characteristics of the sample and any outstanding features or deficiencies which are apparent. Again, for physical characteristics, the mixogram data are given with no specific comments made regarding the patterns, since reference mixograms for each of the general types are presented at the end of the report.

Generally, the crop was grown under somewhat unusual conditions in that there was ample moisture at planting time but little or no rainfall during the growing season. Fortunately, sufficient subsoil moisture was available to produce a good crop. The unusual growing season was apparently reflected in the low mineral content of the wheats. Although the flour mineral content was lower than last year, it was the same as the 1965 crop and not as low as would be expected from the wheat mineral content. The average extraction was lower than the 1966 crop. The baking performance was slightly down from the 1966 crop showing lower absorption, loaf volume, and grain, although the dough was slightly stronger and mixing requirements longer. The lower absorption was a reflection of the lower protein content, averaging 1.5% lower than the 1966 crop.

The oxidation requirements for the 1967 crop were higher than the 1966 crop, requiring approximately 10 p.p.m. bromate. Some samples even showed the need for more oxidation.

^{3/} Lebsock, K. L., "Results on Spring Wheat Varieties Grown in Cooperative Plot and Nursery Experiments in the Spring Wheat Region in 1967." Crops Research Division, Agricultural Research Service, USDA.

SOURCE OF THE SAMPLES

Tests were performed on 491 samples received from advanced yield nurseries, field plots, uniform regional nurseries, and sawfly yield nurseries of the 1967 crop. These samples originated in 7 states: Colorado, Minnesota, Montana, North Dakota, South Dakota, Wisconsin, and Wyoming. Twenty-one stations from these states were represented, namely, Center and Fort Collins in Colorado; Crookston, Morris, St. Paul, and Waseca in Minnesota; Bozeman, Dutton, Havre, and Sidney in Montana; Carrington, Dickinson, Fargo, Langdon, Minot, and Williston in North Dakota; Highmore and Watertown in South Dakota; Madison in Wisconsin, and Laramie and Sheridan in Wyoming.

Due to apparent differences in the characteristics of the wheats and protein contents, no samples were blended this year, except the Colorado samples which were blended before receipt.

On page 5 are listed the spring wheats which were included in the 1967 Uniform Regional Nursery trials. The variety or cross, the station which developed the variety, the state selection number, and the C.I. number are given.

In Table 24 are given the average data for the Uniform Regional Nursery samples. The data for kernel characteristics, milling performance, and mixograms are arithmetical averages of the individual samples. However, the baking data were obtained from blends of equal proportions of the individual flours for each sample from the 18 stations.

In Table 31 are given the average data for the Sawfly Yield Nursery samples obtained from the arithmetical averages of the individual samples.

ENTRIES FOR THE 1967 UNIFORM REGIONAL HARD RED SPRING WHEAT NURSERY

Entry No.	Cross or Variety	Sel. No.	C.I. No.	New or Old	Developing Station
1	Marquis		3641	Old	Canada
2	Thatcher		10003	"	Minnesota
3	Selkirk		13100	"	Canada
4	Justin		13462	"	N. Dak.
5	Chris		13751	"	Minnesota
6	Manitou		13775	"	Canada
7	M2824 ² x II-50-72	II-55-11	13773	"	Minnesota
8	M2824 ² x II-50-72	II-55-16	-	"	"
9	Tc x Ftn-Hry	II-56-40	-	"	"
10	Crim x II-53-521	II-59-91	-	"	"
11	(II-50-17 x 51-2688)ND4-Rsc	61-107	13937	"	N. Dak.
12	[Penjamo 62 x(Hry ⁷ xP54)x(K184xWis250 ⁷)] x(K184xWis250 ⁴)	Wis.261	-	"	Wisconsin
13	"	Wis.270	-	New	"
14	"	Wis.271	-	"	"
15	RL4125 x RL4008*	RL4200	-	"	Canada
16	Justin x ND81	ND363-1	-	"	N. Dak.
17	Justin x Conley-ND122	ND478	-	"	"
18	Justin x ND333	ND479	-	"	"

* RL4125 is Tc⁷-Ftn x Tc⁶-KF; RL4008 is Tc² x Ftn-Tc.

METHODS

The terminology and methods used are briefly described below:

Test Weight Per Bushel - The weight per Winchester bushel of cleaned, dry, scoured wheat. To determine the dockage-free test weight on a comparable sample, approximately one pound per bushel should be subtracted from the value given.

1000 Kernel Weight - The 1000 kernel weight was determined by counting the number of kernels in a 10 gram sample of cleaned, picked wheat with an ASCO Seed Counter^{4/}.

Kernel Size - The percentages of the size of the kernels (large, medium, and small) were determined on a wheat sizer as described by Shuey^{5/}.

The sieves of the sizer were clothed as follows:

Top Sieve	-	Tyler # 7 with 2.92 mm. opening
Middle Sieve	-	Tyler # 9 with 2.24 mm. opening
Bottom Sieve	-	Tyler #12 with 1.65 mm. opening

Potential Yield - The potential yield was determined by multiplying the percentages of the overs of each sieve #7, #9, and #12, by the value of 78%, 73%, and 68%, respectively. The accumulation percentage is given as the potential yield.

Milling - The samples were cleaned by passing the wheat over an Emerson Kicker and Dockage Tester and through a modified Forster Scourer Model 6. The clean dry samples were pre-tempered to 12% moisture for at least 72 hours; then tempered to 16% moisture and allowed to stand overnight prior to milling.

All samples except the advanced yield nursery and field plot samples were milled on a Brabender Quadrumat Junior Mill. The mill was equipped with a #18 wire on the drum sieve. The throughs of the #18 wire were rebolted on a Strand Sifter equipped with a #60 Tyler sieve. The sample was sifted for 1 minute. The throughs of the #60 wire were classified as flour and this was the material tested. The overs of the #18 wire were classified as bran and the throughs of the #18 wire and overs of the #60 Tyler sieve as crude shorts.

The field plot and advanced yield nursery samples were milled on a Buhler Continuous Experimental Mill. This mill has been slightly modified

4/ Mention of a trademark name or a proprietary product does not constitute a guarantee or warranty of the product by the USDA, and does not imply its approval to the exclusion of other products that may also be suitable.

5/ Shuey, William C. A Wheat Sizing Technique for Predicting Flour Milling Yield. Cereal Science Today 5: 71-72,75 (1960).

to give results more comparable to commercial milling. The break scalping sieves were clothed with #54 stainless steel wire, the reduction scalping sieves with #58, #66, and #105 stainless steel wires for the first, second, and third reduction, respectively. All of the flour sieves were clothed with #135 stainless steel wire.

All six flour streams were combined to give the patent flour. The extraction of a good milling wheat using this flow is approximately 68%. This is comparable to a commercial "long patent" extraction flour. At this flour extraction of the wheat, the changes in flour ash are most sensitive to changes in percent extraction.

Protein Content - The protein was calculated by multiplying the factor of 5.7 times the percent nitrogen as determined by the standard Kjeldahl procedure.

Mineral Content or Ash Content - This was determined by measuring the residue of the minerals left after incinerating the sample for approximately 16 hours at 565° C. The results were reported as percentage of the sample which was incinerated.

Mixogram - The mixogram was determined by using 30 g. of flour and adding 20 cc. of water. The sensitivity spring setting was set at 10. All mixograms were run with constant weight of flour and volume of water. Absorptions reported were adjusted according to the height of the mixogram. The correction factor was determined from a series of flours by varying the amount of absorption.

Mixogram Pattern - The reference mixogram patterns given at the end of the report demonstrate the different types of mixograms which were obtained. A single number is assigned each pattern to characterize and simplify the classification of the curves - the larger number indicating stronger curve characteristics.

Baking Procedure or Formula - The baking formula used was as follows:

100% flour	3% milk D.S.M.
2% salt	3% yeast
5% sugar	2% shortening (Crisco, melted)

The sample was mixed to development in a National Manufacturing mixer, for the 25 g. sample the Micro mixer, for the 100 g. sample the 100 g. special mixer size. Also, 10 p.p.m. of bromate and 0.1% Barley Malt Flour was used for oxidation and enzymatic supplements, respectively.

Absorption - This was the water, expressed as percent of the flour, required to bring the dough to proper consistency.

Crumb Color - This value was determined by comparing the loaf of the tested sample against a baking standard. This standard was selected as an average for the crop year for the spring wheat area.

Loaf Volume - This was volume of the baked loaf as determined by seed displacement.

All values (Protein, Ash, and Absorption) were reported on a 14% moisture basis.

DISCUSSION

The following discussion presents some of the basis for the techniques and criteria used in evaluating the samples. There are four major evaluation categories used: Kernel characteristics, to characterize the kernel; milling performance, to evaluate the general milling characteristics; mixogram patterns, to classify the flour as to type; and baking evaluation, to rate the flour as to overall baking.

Each evaluation category can be important. A sample could be of a sufficiently poor quality for a given category to eliminate it from possible future testing. However, a sample submitted for the first time and found to be questionable should be tested again to establish if it has a satisfactory or unsatisfactory classification. A sample which is consistently rated as questionable should be discarded.

All samples, as in previous years, are compared to a milling and baking standard which represents a blend of the crop year blended to a known quality. However, the samples for the individual stations were evaluated against the average results of the varieties Chris, Justin, and Selkirk from the respective stations. The agronomic and climatic conditions of the individual locations can effect the quality of the wheat sample, such that, the evaluation at certain locations could have all samples -- even the named varieties -- classified as questionable to unsatisfactory. Therefore, the evaluation ratings of one station are not directly comparable to those of another station. For example, an area may produce low protein wheats which give large and plump kernels, good milling and kernel characteristics, but low protein, and unsatisfactory baking properties such as short mixing time, low loaf volume, and weak dough characteristics. The wheat from this area could not be considered as a strong spring wheat, and would not maintain the quality expected from the spring wheat producing area. A good variety should have tolerance to a wide range of environmental conditions and the overall picture taken into consideration for establishing these varieties.

A sample rated as satisfactory to questionable has only a very minor fault; however, if it is questionable to satisfactory, the fault is more serious, but in either case the fault is not sufficient to be considered as detrimental. For questionable to unsatisfactory, and unsatisfactory to questionable, the faults are much more serious and the sample would have little future promise of being accepted if such faults are consistent.

When more than one of the factors are below the standard, the variety is marked as questionable or unsatisfactory. If sufficient data accumulated over a two- or three-year period show a definite deficiency, the variety should be discarded. If a major fault is found, the variety is undesirable and should be discarded.

Kernel Characteristics are important in determining the initial value of the wheat and, if extremely poor, could disqualify a new variety from further consideration. Because of the present grading system, it is

desirable to have a good test weight. If a sample has a low 1000 kernel weight and small kernel size distribution, it would be considered a poor sample for milling because of the high ratio of bran to endosperm. Therefore, it is desirous to have plump kernels. Wheat ash is an important factor when comparing a variety against other standard varieties. If a sample would have consistently higher wheat mineral content, it would enhance the probability of having high flour ash. Low protein would not be desirous when comparing with standard varieties, because in a low protein crop year the probability of it having such a low protein as to be undesirable is very probable. Therefore, the protein must also be considered as a characteristic when comparing other varieties grown in the same locality.

Milling Performance is very important, especially the sub-category of milling characteristics. If low extractions or high flour ash are obtained, this becomes a major factor and is quite unacceptable from a commercial milling standpoint. All flour mineral contents are reported at a constant extraction of 65% so that the figures are directly comparable. As a rule of thumb, one can approximate that each point of ash (0.01%) is equivalent to approximately 2% in extraction.

Milling characteristics are important. A sample which tends to be soft in character requires a different milling technique to be milled properly. On commercial mills flowed for hard vitreous spring wheats, soft milling characteristics cause great difficulty. Therefore, if a sample shows softness in character, it is considered to be unsatisfactory. Likewise, a sample which is extremely hard and vitreous will cause difficulty. Both types of wheat (soft or vitreous) require different roll pressures, clothing, sifter surface, and temper to be milled properly. If these wheats are blended with normal milling wheats, improper results are obtained since these characteristics are not necessarily compatible or additive. Normal to soft score indicates that the sample shows a tendency toward softness of character on the flour mill stocks and extraction. This would indicate that the sample may give some difficulty for certain mill streams and an adjustment would either have to be made in the milling flow, or in tempering procedures to compensate for these differences. The properties of this wheat may or may not be compatible with other wheats with which it may be blended, therefore, it is important to maintain varieties with as uniform milling characteristics as possible.

The amount of protein recovered in the flour for a sample is of importance. The high protein wheats yielding low protein flours are not desirable. Such a wheat would have much of the protein distributed in the outer portion of the kernel which would result in excessive protein in the feed. Therefore, higher protein in the wheat would be necessary to yield a flour of comparable protein to a wheat which gives good flour protein recovery.

Mixogram Patterns and Farinogram Patterns are important in estimating the strength and mixing tolerance or potential mixing tolerance of a flour. A long flat curve is more desirable than a short peaked curve; however, an extremely

long curve may be undesirable, since the flour would require excessive mixing to develop. The pattern of the curve is of importance as well as the length, and both must be considered.

Baking Evaluation takes into account the flour absorption, mixing time, dough characteristics, loaf volume, and machinability. A sample which has low absorption would be unsatisfactory, compared to other spring wheats with normal absorption. A sample with extremely short mixing time would also be considered undesirable as a good strong spring wheat. When a sample is in the minimal range for these values, it is considered as questionable until further testing demonstrates whether a definite deficiency exists.

Doughs having mellow to weak dough properties show a tendency towards weakness. Also, for mellow to strong, the dough is mellow, but has a tendency to be strong, and a strong to mellow dough is just the reverse. Since these characteristics are subjective rather than objective, it is necessary at times to estimate the tendency; therefore, the necessity exists for apparent double grades.

The grain or appearance of the interior of the loaf shows how well the sample stood up during baking and may point out or explain some deficiencies which have been observed during the baking test.

Loaf volume indicates potential strength of the flour in a different manner than mixing time or dough characteristics, in that it shows the ability or lack thereof for the dough to expand under pressure and to contain the entrapped gases during this expansion. Weak flours act much like rotten balloons which burst when blown up and collapse, thus yielding low loaf volume or extremely large volume and large holes in the interior of the loaf. Low protein flours and lifeless (dead) doughs exhibit the properties similar to putty and do not expand during fermentation or baking and give low loaf volume. Tough and very bucky doughs are bound too tight and impede expansion of the gases causing low loaf volume.

General Evaluation rating is given for varieties which have been tested at least for two crop years. This evaluation takes into account the various grading factors and the results of the crop years as an overall rating. The main defects and outstanding features are discussed. A variety which shows some promise with outstanding agronomic characteristics should be seriously considered and looked at in large plots, if it has not been previously, providing other sufficient information has been obtained. A sample which shows little promise should be discontinued.

ADVANCED YIELD NURSERY SAMPLES - 1967 CROP

Nine named wheat varieties were received from two Colorado stations - Center and Fort Collins. These samples were blended prior to receiving them from Fort Collins.

The data for the individual samples are given in Table 1. Of the varieties tested, Chris and Crim appear to be the best adapted for this area.

FIELD PLOT NURSERY SAMPLES - 1967 CROP

Forty-three field plot nursery samples were received from two states and three stations. The data for the individual samples are given in Tables 2 through 4. In Table 5, are given the averages for the varieties by states for the following varieties: Chris, Crim, Justin, and Selkirk for North Dakota, and Chris and Selkirk for Wisconsin. The averages for these commercial varieties per location were used as standard for judging the other samples in the field plots. The 1966 and 1967 averages also are given for these varieties for each of the states for comparative purposes.

NORTH DAKOTA SAMPLES

Thirty-five samples were received from the Dickinson and Williston, North Dakota stations. Twenty-four of these samples were named varieties of Canthatch, Chinook, Chris, Crim, Fortuna, Justin, Manitou, Pembina, Plainsman, Selkirk, Sheridan, Thatcher, and Valley. Eight of the samples were the unnamed selections: II-55-11, M3-1, M4-1, M4-7, M4-9, 61-107, ND 363-1, and Wisc. 255. The results for each variety and selection are given in Tables 2 and 3. The average results of the 1967 data for North Dakota were used to judge the performance of the other samples submitted. These data are given in Table 5.

II-55-11 (C.I. 13773)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

General Evaluation - Satisfactory. Based on two years of data, this selection shows good promise.

M3-1

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. The color and loaf volume are slightly down.

M4-1

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Loaf volume slightly down.

M4-7

Kernel Characteristics - Satisfactory.

Milling Performance - Very Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Loaf volume slightly down.

M4-9

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

61-107 (C.I. 13937)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Minimum absorption for the Dickinson sample.

General Evaluation - Questionable. This selection continues to show low or minimum absorption, therefore would have little promise.

ND 363-1 (C.I. 13828)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

General Evaluation - Satisfactory to Questionable. Based on two crop years of field plot data, this sample shows some promise. The Williston sample showed minimum flour extraction and the Dickinson sample minimum loaf volume.

Wisc. 255 (C.I. 13588)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. Flour ash was maximum.

Wisc. 255 (C.I. 13588) Cont'd.

Baking Evaluation - Satisfactory to Questionable. Minimum mixing time and crumb color.

General Evaluation - Questionable to Satisfactory. Based on two crop years, this selection shows some promise.

WISCONSIN SAMPLES

Eight samples were received from the Madison, Wisconsin station. Five of the samples were unnamed selections: II-55-11, Wisc. 255, Wisc. 261, Wisc. 270, and Wisc. 271. Three of the samples were the named varieties: Chris, Lathrop, and Selkirk. The results are given in Table 4. The average results of Chris and Selkirk for the station were used to judge the performance of the samples. These results are given in Table 5, as the 1967 crop average.

II-55-11 (C.I. 13773)

Kernel Characteristics - Very Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

Wisc. 255 (C.I. 13588)

Kernel Characteristics - Satisfactory.

Milling Performance - Unsatisfactory. High flour mineral content and tendency to soft milling characteristics.

Baking Evaluation - Satisfactory.

General Evaluation - Satisfactory to Questionable. Based on previous performance, the milling results this crop year are unusual. The high wheat mineral content is reflected in the flour mineral content. This selection does show some promise.

Wisc. 261

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Questionable to Satisfactory. Poor interior.

Wisc. 270

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

Wisc. 271

Kernel Characteristics - Satisfactory.

Milling Performance - Very Satisfactory.

Baking Evaluation - Satisfactory.

UNIFORM REGIONAL NURSERY SAMPLES - 1967 CROP

A total of 324 Uniform Regional Nursery samples were received. The samples represented 18 stations from 6 states. No blends were made of the samples for this crop year due to lack of compatibility and were milled as individual samples to eliminate any possible erroneous results. Thus, a total of 324 samples were milled and baked. Eighteen samples were received from each of the stations. Twelve selections were included for quality evaluation in the Uniform Regional Nursery samples. The remainder of the samples were the commercially, named varieties of Chris, Justin, Manitou, Marquis, Selkirk, and Thatcher.

Seventy-two samples were received from the 4 Minnesota stations of Crookston, Morris, St. Paul, and Waseca. Data for these samples are given in Tables 6 through 9. Yellow berries and some blackpoint were noted in the Morris, St. Paul, and Waseca samples, as well as ergot in the St. Paul and Waseca samples.

Fifty-four samples were received from 3 stations in Montana: Bozeman, Havre, and Sidney. Data for these samples are given in Tables 10 through 12.

One hundred and eight samples were received from 6 stations in North Dakota: Carrington, Dickinson, Fargo, Langdon, Minot, and Williston. The data for these samples are given in Tables 13 through 18.

Thirty-six samples were received from 2 stations in South Dakota: Highmore and Watertown. The data for these samples are given in Tables 19 and 20.

Eighteen samples were received from the Madison, Wisconsin station. The data are given in Table 21. Yellow berries and blackpoint were noted in these samples.

Thirty-six samples were received from 2 Wyoming stations: Laramie and Sheridan. The data for these samples are given in Tables 22 and 23. Some of the Laramie, Wyoming samples contained smut. The very deleterious effect upon the flour color will be noted from the data in Table 22 for the II-55-11 sample.

In Table 24 are given the average results for each of the 18 samples submitted from the 6 states and 18 stations. The results for the kernel characteristics, milling performance, and mixogram patterns were obtained by averaging the results from the 18 tables--6 through 23. However, the baking results were obtained from a blend of the flours in equal proportions from each of the stations for the respective variety or selection. The regular 100 gram straight dough rich formula baking procedure was used in baking the flour blends. Again, as last year, the column, General Evaluation, was included which takes into consideration the general overall performance of the samples. This will afford a ready reference.

For simplicity and brevity of the report, as in previous reports, each variety will be discussed from the general overall average of the results given in Table 24, rather than the individual stations. The general evaluation summarizes the results from the individual stations or from two or more crop years, as well as the tolerance test. The evaluation is more meaningful for the overall performance of the variety when at least two or more crop years are included.

In Table 25, the averages are given by state for the 3 varieties of Chris, Justin, and Selkirk. This table gives a comparison of the varieties by state, as well as state averages of the 3 varieties for comparative purposes, and the 1967 grand averages. The 1966 grand averages for the same 3 varieties are also given for comparison of the two crop years. In general, the 1967 crop had better kernel characteristics, 1.5% less protein which was also reflected in lower baking absorption, and somewhat poorer milling results with 2.5% less extractions, but 3 points lower mineral content compared to the 1966 crop. The mixing time was longer; the mixogram patterns equal, although the dough character was stronger; the crumb grain slightly poorer, and the loaf volume lower than the 1966 crop.

The average results of the varieties Chris, Justin, and Selkirk for each of the individual stations were used as a standard for the other selections from that station. Therefore, a variety or a selection may be rated Satisfactory at two different stations; however, comparison of the data may show much poorer results for one station due to adverse agronomic conditions. Thus, in actuality, the sample with poorer results could be rated as Unsatisfactory quality wise when compared to the overall spring wheat area. The state averages in Table 25 are additional guides for the relative performance for the crop year by states.

The average results for the new varieties or selections were:

RL 4200

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. This selection shows a tendency to give minimum extraction.

Baking Evaluation - Questionable to Unsatisfactory. This selection shows a tendency toward minimum absorption, short mixing time, and a tendency to give weak doughs.

General Evaluation - Unsatisfactory. Based on this crop year's results, this selection would show no promise as a new variety because of its minimum milling properties and poor baking results.

II-55-11 (C.I. 13773)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory.

General Evaluation - Satisfactory. Based on 5 crop years, this variety has had a tendency to give erratic minimal results from different areas, for both milling and baking; however, this selection does show good promise as a new variety.

II-55-16

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable to Satisfactory. This selection showed minimum extraction and, for some stations, showed a tendency to be soft in milling characteristic.

Baking Evaluation - Satisfactory to Questionable. The baking results were somewhat erratic.

General Evaluation - Questionable. Based on 2 crop years, this selection shows little promise as a new variety due to the minimum milling performance and erratic baking results.

II-56-40

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Questionable. This sample showed low absorption and long mixing time, which may be too long.

General Evaluation - Satisfactory to Questionable. Based on 2 crop years, this selection shows some promise as a new variety. However, it does show minimum baking absorption and long mixing time which could be a problem. The milling performance was not as outstanding as last year which was rated as very satisfactory.

II-59-91

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable to Unsatisfactory. Low extraction and high flour ash.

Baking Evaluation - Satisfactory.

II-59-91 Cont'd.

General Evaluation - Unsatisfactory to Questionable. Based on 2 crop years, this selection would show no promise as a new variety due to its milling characteristics which show a tendency to give low extraction and high flour ash.

61-107 (C.I. 13937)

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable. This selection shows a tendency to give minimum extraction and has soft milling characteristics.

Baking Evaluation - Questionable to Satisfactory. Minimum mixing time, absorption, and dough characteristics.

General Evaluation - Unsatisfactory to Questionable. Based on 3 crop years, this selection would show no promise as a new variety, primarily due to weak dough characteristics and questionable milling performance.

ND 363-1 (C.I. 13828)

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. This selection shows a tendency to give poor grain and interior loaf structure.

General Evaluation - Satisfactory to Questionable. This selection, based on 4 crop years, would show some promise as a new variety, although it has given minimum milling performance and somewhat erratic baking results.

ND 478

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. Although this selection has shown a tendency to have soft milling characteristics, it has not been exhibited in the flour extraction.

Baking Evaluation - Satisfactory.

General Evaluation - Based on this crop year, this selection would show some promise as a new variety; however, the milling characteristics would have to be evaluated more closely.

ND 479

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable. This selection shows minimum extraction and a tendency to give soft milling characteristics.

Baking Evaluation - Unsatisfactory to Questionable. The mixing time is short and the dough character is weak for this selection. Also, this selection required 20 p.p.m. of bromate compared to 10 p.p.m. for the other samples.

General Evaluation - Unsatisfactory. Based on this crop year's results this selection would show no promise as a new variety due to the poor milling performance and baking evaluation, as well as the unusual response to oxidation.

Wisc. 261

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Questionable to Satisfactory. Low absorption, questionable long mixing requirements, and somewhat poor interior of the loaf.

General Evaluation - Questionable. Based on 2 crop years, this selection would show little promise as a new variety due to the minimum absorption and questionable length of mixing time.

Wisc. 270

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable to Satisfactory. This selection shows minimum extraction and a tendency to have soft milling characteristics.

Baking Evaluation - Questionable to Satisfactory. Mixing time appears to be abnormally long.

General Evaluation - Questionable. This selection would show little promise as a new variety due to the milling characteristics and the abnormally long mixing time which was shown for the individual samples. However, the blend did not show this as readily but on extended mixing the sample did not stand up as well.

Wisc. 271

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. Sample did show a tendency to exhibit, for some stations, soft milling characteristics.

Baking Evaluation - Satisfactory to Questionable. This sample showed minimum absorption but did not show as long a mixing requirement as the other Wisconsin samples.

General Evaluation - Questionable to Satisfactory. Based on this year's results, this selection would show some promise as a new variety; although it did give minimum baking absorption and did have a tendency, at some locations, to show soft milling characteristics.

SAWFLY YIELD NURSERY SAMPLES - 1967 CROP

One hundred and fifteen samples were received from 3 stations in Montana and 2 stations in North Dakota. Twenty-three samples were received from the stations in Dutton, Havre, and Sidney, Montana and Fargo and Williston, North Dakota. Six of the samples from each station were the following named varieties: Chinook, Cypress, Fortuna, Rescue, Sawtana, and Thatcher. Seventeen of the samples from each station were the following selections: QLS-201, QSF-254-3A, Q72-5135, 7169-293, 7530-433, 7530-445, 7169-88, 7532-2, 7530-436, MT 6669, MT 6671, MT 6679, S6529, S6555, S6579, S6589, and 61-107. The data for these samples for the individual stations are given in Tables 26 through 30. In Table 30, are given the average of the five stations for each of the varieties with an additional "General Evaluation" column. This year, for each station, the varieties of Chinook, Fortuna, Rescue, and Thatcher were averaged for a standard performance and the results of the individual samples were compared to this average..

QLS-201

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable. Low extraction and high ash.

Baking Evaluation - Satisfactory to Questionable. Extremely long mixing time.

General Evaluation - Questionable. Based on this crop year, this selection would show little promise as a new variety due to the low extraction, tendency towards high ash, and extremely long mixing time.

QSF-254-3A

Kernel Characteristics - Satisfactory to Questionable. Minimum kernel size distribution.

Milling Performance - Questionable to Satisfactory. Minimum flour extraction with a tendency to show soft milling characteristics for some samples.

Baking Evaluation - Satisfactory to Questionable. Minimum absorption, mixing time, color, and poor grain.

General Evaluation - Questionable. This selection, based on the results for this crop year, would show little promise as a new variety due to minimum performance and characteristics in all three categories.

Q72-5135

Kernel Characteristics - Satisfactory to Questionable. Low test weight.

Milling Performance - Satisfactory to Questionable. High flour ash.

Baking Evaluation - Satisfactory to Questionable. Poor crumb color.

General Evaluation - Questionable. This selection would show little promise as a new variety due to low test weight, high flour ash, and poor crumb color.

7169-293

Kernel Characteristics - Satisfactory to Questionable. Minimum kernel weight and kernel size distribution.

Milling Performance - Questionable. Low extraction and tendency for soft milling characteristics.

Baking Evaluation - Satisfactory to Questionable. The crumb grain of this selection is minimal.

General Evaluation - Questionable. Based on this crop year's results, this selection would show little promise as a new variety due primarily to the milling characteristics. However, it was down slightly in kernel characteristics and baking evaluation.

7530-433

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Somewhat erratic results in the crumb grain.

General Evaluation - Satisfactory to Questionable. This selection shows some promise as a new variety, however, the crumb grain is down slightly from that normally associated with spring wheats.

7530-445

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Minimum mixing time and baking absorption.

General Evaluation - Satisfactory to Questionable. This selection does show some promise as a new variety, although it exhibits minimum mixing time and minimum baking absorption.

7169-88

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. The flour extraction down slightly with a tendency to show soft milling characteristics.

Baking Evaluation - Satisfactory to Questionable. This selection has a tendency to show erratic baking results.

General Evaluation - Satisfactory to Questionable. Based on one year's results, this selection does show some promise as a new variety, although it does give erratic baking results.

7532-2

Kernel Characteristics - Satisfactory to Questionable. Minimum kernel weight and kernel size distribution.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Short mixing time and poor crumb interior of the loaf.

General Evaluation - Questionable. This selection shows little promise as a new variety based on 2 crop years. Last year it was rated as questionable to satisfactory due to erratic and minimum milling performance. This year the short mixing time and poor crumb interior of the loaf would be the major faults.

7530-436

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. Maximum flour ash.

Baking Evaluation - Satisfactory to Questionable. Minimum mixing time and low loaf volume.

General Evaluation - Questionable. Based on two crop years, this selection would show little promise as a new variety as it has consistently shown minimum milling results and, this year, minimum mixing time and loaf volume.

MT 6669

Kernel Characteristics - Satisfactory to Questionable. Minimum 1000 kernel weight.

Milling Performance - Questionable to Satisfactory. The extraction is minimum with a tendency to show soft milling characteristics and a 1.2% spread in protein between the flour and wheat.

Baking Evaluation - Questionable to Satisfactory. Low absorption and loaf volume.

General Evaluation - Questionable to Unsatisfactory. This sample would show little promise as a new variety due to deficiencies in each of the three categories.

MT 6671

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory. Although it does show a 1.2% spread between flour and wheat protein.

Baking Evaluation - Questionable to Satisfactory. This sample shows minimum absorption and loaf volume.

General Evaluation - Questionable. Based on this year's results, this sample would show little promise as a new variety due to the minimum baking performance.

MT 6679

Kernel Characteristics - Satisfactory.

Milling Performance - Questionable. Lowest extraction of all the samples in the series and a tendency to show soft milling characteristics.

Baking Evaluation - Satisfactory to Questionable. Minimum absorption and loaf volume.

General Evaluation - Unsatisfactory to Questionable. Based on one year's results, this sample would show no promise as a new variety due to deficiencies in milling characteristics and minimum baking performance.

S6529

Kernel Characteristics - Satisfactory to Questionable. Low test weight.

Milling Performance - Satisfactory.

S6529 Cont'd.

Baking Evaluation - Satisfactory to Questionable. Results slightly erratic.

General Evaluation - Questionable to Satisfactory. This selection would show some promise as a new variety, although it does have low test weight and somewhat erratic baking results.

S6555

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory to Questionable. Extraction minimum and a tendency to show soft milling characteristics.

Baking Evaluation - Satisfactory.

General Evaluation - Satisfactory to Questionable. Based on one crop year, this sample would show some promise as a new variety; however, the minimum milling performance may be sufficient on future evaluations to reject the sample.

S6579

Kernel Characteristics - Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Somewhat erratic crumb grain structure.

General Evaluation - Satisfactory to Questionable. This selection shows some promise as a new variety. It has good 1000 kernel weight and kernel size distribution, as well as low flour ash.

S6589

Kernel Characteristics - Satisfactory to Very Satisfactory.

Milling Performance - Questionable to Satisfactory. Low extraction, tendency for high ash, and possible soft milling characteristics.

Baking Evaluation - Satisfactory to Questionable. Somewhat erratic results.

General Evaluation - Questionable. This selection would show little promise as a new variety because of the poor milling performance in accordance with the good kernel characteristics.

61-107 (C.I. 13937)

Kernel Characteristics - Very Satisfactory to Satisfactory.

Milling Performance - Satisfactory.

Baking Evaluation - Satisfactory to Questionable. Baking results somewhat erratic.

General Evaluation - Questionable. Based on 4 crop years, the baking performance of this selection has been minimum. Due to somewhat erratic results of the milling performance and the baking performance, this selection would show little promise as a new variety. Although, this year the general evaluation would be some promise.

TABLE 1

QUALITY DATA ON ADVANCED YIELD NURSERY SAMPLES

Center and Fort Collins, Colorado

1967 CROP

Variety or Sel. No.	C.I. No.	T.W. Kwt.	1000 Kernel Lg.	Kernel Size Med. Sm.	Pot. Yld.	Wht. Min. Pro. 2/ 2/	Kern. Char. 3/ 3/	Flr. Ext. 65%Ex. 2/ 2/	Min. @ Flr. Char. 4/ 4/	Mig. Pcr. 3/ 3/	Mix. Abs. 5/ 5/	Bake Time min. 6/ 6/	Dough Char. 7/ 7/	Crumb Color 8/ 8/	Crumb Grain 8/ 8/	Loaf Vol. 3/ 3/	Bake Eval. cc.
Chris	13751	63.0	33.2	64	33	3	76.1	1.69	13.8	S	61.2	.40	13.7	N	66.0	2-1/2	
Crim	13465	61.5	36.9	74	24	2	76.6	1.70	14.3	S	62.5	.41	14.1	N	68.5	3	
Fortuna	13596	62.4	42.4	70	26	4	76.3	1.72	13.0	S	67.0	.44	12.9	N	64.7	2-3/4	
Lee	12488	61.3	35.7	68	31	1	76.4	1.90	14.2	Q	56.8	.62	13.9	Q	65.0	3	
Manitou	13775	62.0	33.0	60	38	2	75.9	1.68	14.7	S	60.6	.44	14.6	N	65.0	3	
Marquis	3641	61.9	36.0	64	34	2	76.1	1.70	12.4	S	59.8	.46	12.2	N	63.2	2	
Nadadores	13931	60.4	43.1	69	28	3	76.3	1.52	10.5	S	61.0	.40	10.1	N	61.0	2-3/4	
Sheridan	13586	62.9	32.2	74	24	2	76.6	1.78	13.3	S	61.1	.45	12.8	N	64.2	2-1/4	
Thatcher	10003	62.3	33.1	59	39	2	75.9	1.70	13.8	S	58.8	.45	13.4	N	63.5	3	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.
3/ Questionable, U - Unsatisfactory, V - Very.
4/ S - Satisfactory, Q -

N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.
7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.
8/ O - Open, I - Irregular, S - Soogey, T - Thick Wall, S1 - Slightly, H - Close, N - Harsh.

TABLE 2

QUALITY DATA ON FIELD PLOT NURSERY SAMPLES

Dickinson, North Dakota

1967 CRC?

Variety or Sel. No.	C. I. No.	T. W. Kwt. <u>1/</u>	1000 Kernels <u>g.</u>	Kernel Size <u>%</u>	Pot. Yld. <u>%</u>	Wh. Min. <u>2/</u>	Wh. Pro. <u>2/</u>	Kern. Char. <u>3/</u>	Flr. Ext. <u>2/</u>	Min. @ Flr. <u>2/</u>	Mlg. 65% Ex. <u>2/</u>	Mlg. Pro. <u>2/</u>	Mix. Abs. <u>2/</u>	Mix. Pat. <u>2/</u>	Mix. Abs. <u>2/</u>	Mix. Pat. <u>2/</u>	Dough Abs. <u>2/</u>	Dough Pat. <u>2/</u>	Crumb Color <u>7/</u>	Crumb Grain <u>7/</u>	Crumb Grain <u>8/</u>	Loaf Vol. <u>7/</u>	Loaf Vol. <u>8/</u>	Bake Eval. <u>3/</u>	cc.
Canhatch	13345	56.1	27.0	33	64	3	74.5	1.79	15.1	S	57.4	.52	13.9	N	59.0	1	58.0	3	N-N	38 DC	90 0	975	U		
Chris	13751	59.6	29.0	26	72	2	74.2	1.91	14.6	S	62.0	.42	14.0	N	62.3	2	62.3	3-1/4	S	90 SIC	90 0	890	Q-S		
Crim	13465	59.9	27.9	27	71	2	74.3	1.80	14.6	S	61.2	.41	13.9	N	65.3	4	65.3	4	VS	90 SIC	90 0	980	Q-S		
Fortuna	13596	59.9	32.1	15	83	2	73.7	1.81	13.2	S	63.0	.41	12.7	N	61.0	3	105 C	90 0	S-Q	90 0	935	S-Q			
Justin	13462	58.6	23.8	3	93	4	73.0	1.72	15.3	S	62.1	.39	14.4	N	63.8	4	63.8	3-1/2	S	100 C	80 0	940	S-Q		
Manitou	13775	59.9	24.4	4	92	4	73.0	1.82	13.9	S	63.8	.40	13.2	N	61.6	3	61.6	3-1/4	S	95 C	80 0	905	Q		
Pembina	13332	58.2	23.5	2	93	5	72.9	1.83	14.6	S	64.7	.42	14.1	N	63.8	5	63.8	4-3/4	VS	90 SIC	80 I	980	S		
Selkirk	13100	56.1	22.9	2	92	6	72.8	1.82	14.3	S-Q	65.9	.40	13.3	N	62.5	5	62.5	4-1/2	VS	100 W	90 I	1050	S		
Sheridan	13586	60.9	28.3	9	88	3	73.3	1.68	14.5	S	65.1	.35	13.8	N	62.5	4	62.5	4	S	100 W	95	955	S		
Thatcher	10003	59.4	24.9	5	92	3	73.1	1.82	15.3	S	65.6	.40	14.3	N	63.5	3	63.5	2-1/4	VS	90 SIC	90 0	935	Q		
Valley	60.3	29.0	28	70	2	74.3	1.80	15.5	S	61.3	.41	14.3	N	64.7	3	64.7	2-1/4	M	95 C	80 0	830	U			
II-55-11	13773	60.3	28.7	22	74	4	73.9	1.74	14.8	S	66.8	.38	14.4	N	64.7	4	64.7	3-1/2	VS	100 W	90 0	1050	S		
61-107	13937	60.1	31.2	31	60	9	74.1	1.74	14.7	S	64.9	.41	14.5	N	62.3	2	62.3	2-1/2	S	95 SIC	80 0	860	Q		
ND 363-1	13838	59.3	28.7	36	62	2	74.7	1.85	15.5	S	64.5	.43	14.7	N	63.2	4	63.2	3-1/4	S	100 SIC	90 I	905	S		
Wisc. 255	13388	59.8	29.0	10	88	2	73.4	1.81	15.6	S	66.4	.45	14.9	N	63.2	3	63.2	2-3/4	VS	90 C	95	990	S-Q		

1/ Clean dry - subtract 1#/Bu, for dockage-free T.W.2/ 14% moisture basis.3/ S - Satisfactory Q - Questionable, U - Unsatisfactory, V - Very.4/ N - Normal, H - Hard, S - Soft.5/ Refer to Reference Mixograms for numerical curve pattern.6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Deep, V - Very.7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, Sl - Slightly, C - Close, H - Harsh.

TABLE 3
QUALITY DATA ON FIELD PLOT NURSERY SAMPLES
Williston, North Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T. W. Kwt.	1000 Kernel Lg.	Size Med.	Port. Yld.	Wht. Min. 2/	Kern. Char. 3/	Flr. Ext. 2/	Min. @ 65% Ex. 2/	Mfg. Char. 4/	Mfg. Per. 2/	Mix. Pat. 2/	Bake Abs. Time 2/	Dough Char. 6/	Crumb Grain 8/	Crumb Color 2/	Dough Vol. 6/	Loaf Bake Evalu. 3/	c.c.	
		#/Bu.	g.	%	%	%	%	%	%	%	%	%	%	%	%	%	%			
Canthatch	13345	59.8	23.6	2	91	7	72.8	1.51	15.5	66.6	.31	14.7	N	S	63.8	3-1/2	S	1035	S	
Chinook	13220	61.1	27.3	4	92	4	73.0	1.51	16.6	66.6	.31	15.6	N	S	65.7	3-3/4	VS	95	S	
Chris	13751	61.0	24.0	2	94	4	72.9	1.49	16.1	66.3	.34	15.2	N	S	63.5	5	VS	95	S-Q	
Crim	13465	60.0	27.9	23	72	5	73.9	1.45	15.5	64.5	.36	14.6	N	Q	66.0	5	VS	100	S	
Fortuna	13596	61.5	33.9	27	71	2	74.3	1.43	15.1	68.6	.34	14.5	N	S	64.7	4	VS	90	S-Q	
Justin	13462	59.6	26.1	5	90	5	73.0	1.53	16.0	65.2	.34	15.4	N	S	65.7	5	VS	105	SIC	
Manitou	13775	59.5	23.1	1	92	7	72.7	1.53	16.1	66.5	.33	15.4	N	S	62.8	4	VS	115	BC	
Pembina	13332	58.7	25.1	2	92	6	72.8	1.44	15.7	66.2	.34	14.2	N	S	63.8	7	VS	90	S-Q	
Plainman	14128	56.1	27.0	3	90	7	72.8	1.50	15.4	S-Q	67.7	.36	14.8	N	Q-S	65.3	5	S	100	SIC
Selkirk	13100	58.3	27.0	4	90	6	72.9	1.45	14.6	68.2	.34	14.2	N	S	63.2	4	S	110	80	
Sheridan	13586	60.9	26.6	4	90	6	72.9	1.44	15.1	64.6	.35	14.6	N	Q	62.8	6	VS	105	SIC	
Thatcher	10003	60.1	23.1	2	91	7	72.8	1.49	15.6	66.2	.37	14.8	N	Q-S	62.5	5	VS	105	SIC	
Valley	13773	59.6	29.7	25	71	4	73.1	1.33	16.0	VS	63.2	.36	14.9	N-S	62.8	3	VS	105	SIC	
II-55-11	61.7	31.7	20	77	3	73.9	1.45	15.2	66.8	.33	14.4	N	N	63.2	5	S	100	90		
M3-1	61.2	25.8	1	94	5	72.8	1.51	16.9	68.5	.35	15.6	N	S	64.7	5	VS	90	S-Q		
M4-1	60.1	27.0	5	92	3	73.1	1.51	17.1	67.0	.32	15.4	N	S	67.6	6	VS	100	SIC		
M4-7	60.7	30.0	10	87	3	73.4	1.51	16.5	68.5	.29	15.7	N	VS	67.0	6	S	105	SIC		
M4-9	59.9	26.7	6	90	4	73.1	1.54	17.0	67.4	.32	15.6	N	S	66.6	5	S	95	SIC		
61-107	13937	59.8	32.4	19	76	5	73.7	1.39	16.6	66.2	.31	15.4	N	S	64.2	4	VS	100	SIC	
ND 353-1	13828	59.3	27.0	9	87	4	73.3	1.47	16.3	65.7	.34	15.8	N	S	65.7	7	VS	110	SIC	
		1/	Clean dry - subtract 1#/Bu. for dockage-free T.W.																	
		2/	14% moisture basis.																	
		3/	S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.																	
		4/	N - Normal, H - Hard, S - Soft.																	
		5/	Refer to Reference Mixograms for numerical curve pattern.																	
		6/	B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.																	
		7/	C - Creamy, G - Gray, D - Dusty, S1 - Slightly, V - Very, B - Bright, W - White.																	
		8/	O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, H - Harsh.																	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

3/ N - Normal, H - Hard, S - Soft.

4/ Refer to Reference Mixograms for numerical curve pattern.

5/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

6/ C - Creamy, G - Gray, D - Dusty, S1 - Slightly, V - Very, B - Bright, W - White.

7/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, H - Harsh.

8/ 1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

TABLE 4

QUALITY DATA ON FIELD PLOT NURSERY SAMPLES

Madison, Wisconsin

1967 CROP

Variety or Sel. No.	C.I. No.	T.W. Krt.	1000 Kernels Ig.	Size Mc., Sm.	Pot. Min. 2/	Wht. Pro. Char. 2/	Kern. Min. 2/	Flr. Ext. 2/	Min. @ 65%Ex. 2/	Flr. Pro. Char. 4/	Mlg. Per. 2/	Bake Abs. 2/	Mix. Pat. 2/	Dough Abs. 2/	Crumb Char. 2/	Loaf Grain 2/	Bake Vol. 2/	Eval. 2/
#/Bu.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	cc.	
Chris	13751	62.3	30.3	46	53	1	75.3	1.78	14.2	S	63.6	.42	13.9	N	63.2	2-3/4	S	105 SIC 95 S10 960 S
Lathrop	13457	58.8	31.0	33	65	2	74.9	1.94	12.0	S-Q	67.6	.36	11.2	N	58.1	2-1/2	N-S	100 C 100 875 Q
Selkirk	13100	59.0	33.9	50	48	2	75.4	1.87	12.9	S	67.3	.42	12.4	N	60.3	2-3/4	N	110 SIC 100 900 S
II-55-11	13773	62.9	37.2	68	31	1	76.4	1.89	14.6	VS	64.1	.42	14.0	N	63.2	3-1/4	S	110 95 S11 1025 S
Wisc. 255	13588	61.0	35.8	64	35	1	76.2	2.07	14.8	S	63.5	.52	14.1	N-S	63.8	3-3/4	S	95 SIC 95 S10 1000 S
Wisc. 261	59.9	35.5	62	36	2	76.0	1.86	12.3	S	66.1	.39	11.6	N	61.9	4	N-S	95 SIC 80 OI 890 Q-S	
Wisc. 270	60.0	34.4	66	32	2	76.2	1.87	12.7	S	66.0	.36	12.2	N	62.8	3-1/2	N-S	95 SIC 95 S10 930 S	
Wisc. 271	60.6	33.7	49	49	2	75.4	1.78	12.3	S	66.6	.36	11.6	VS	61.3	4	N-S	95 SIC 95 S10 925 S	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

3/ N - Normal, H - Hard, S - Soft.

4/ Refer to Reference Mixograms for numerical curve pattern.

5/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

6/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

7/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, SI - Slightly, C - Close, H - Harsh.

TABLE 5

QUALITY DATA ON FILED PLOT STATE AVERAGES

1357 CROP

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 kernel lg.	Kernel Size Med.	Pot. Yld.	Wt. Min. re. 2/	Kern. char. 3/	Flr. Ext. 2/	Min. @ 65° Ex. 2/	Flr. Ext. 2/	Mlg. Char. 4/	Min. Abs. 2/	Min. Abs. 2/	Bake Abs. 2/	Dough char. 6/	Crumb Color 2/	Crumb Grain 8/ 8/	Loaf Vol. 3/	Bake Eval. 3/	cc.
<u>NORTH DAKOTA</u>																				
Chris	13751	60.3	26.5	14	83	3	73.5	1.70	15.4	\$	62.9	4	12.9	3-1/2	\$	90	SIC	93	SIC	
Chris	13465	60.0	27.9	25	72	3	74.1	1.63	15.1	\$	65.7	5	15.7	4-1/2	\$	95	SIC	95	S-Q	
Chris	13462	59.1	25.0	4	92	4	73.0	1.63	15.7	\$	64.3	3	39	14.3	\$	103	SIC	83	S-Q	
Justin	13100	57.2	25.0	3	91	6	72.9	1.64	14.5	\$	64.9	3	37	14.9	\$	105	W	85	1023	
Selkirk	1967 Average _{9/}	59.2	26.1	12	84	4	73.4	1.65	15.2	\$	62.9	5	62.9	4-1/4	\$	105	W	85	1023	
Selkirk	1966 Average _{9/}	58.2	25.6	8	87	5	73.1	1.81	17.0	\$	64.1	5	64.1	4	\$	105	W	85	1023	
<u>WISCONSIN</u>																				
Chris	13751	62.3	30.3	46	53	1	75.3	1.78	14.2	\$	63.5	42	13.9	N	3	63.2	2-3/4	S	105	
Selkirk	13100	59.0	33.9	50	48	2	75.4	1.87	12.0	\$	67.3	42	12.4	N	2	60.3	2-3/4	M	110	
1967 Average _{11/}	60.7	32.1	48	50	2	75.4	1.83	13.6	\$	65.5	42	13.2	N	3	61.8	2-3/4	S	108		
1966 Average _{11/}	59.7	26.5	8	89	3	73.3	2.02	12.9	\$	66.0	45	12.2	N	4	60.2	4	103	95		
<u>CROP YEAR AVERAGE</u>																				
Crop Average 1967	60.0	29.1	30	67	3	74.4	1.74	14.4	\$	65.1	40	13.8		4	62.5	3-1/2		103		
Crop Average 1966	59.0	26.1	8	88	4	73.2	1.92	15.0	\$	65.6	43	14.1		5	63.6	3-3/4		106		

Clean dry - subtract 1#/Bu. for dockage-free T.W.
14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory

Normal, H = Hard, S = Soft.

Refer to Reference Mixograms for numerical curve pattern.

TABLE 7
QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES
Morris, Minnesota

1967 CROP

Variety or Sel No.	C. I. No.	T. W. Kwt.	1000 Lg.	Kernel Med. Sn.	Pot. Min.	Wht. 2/	Kern. Char. 3/	Flr. Ext. 2/	Min. & 65% Ex. 2/	Flr. Pro. 4/	Mig. Char. 2/	Mix. Abs. 2/	Bake Time 2/	Dough Char. 2/	Crumb Color 2/	Crumb Grain 8/	Loaf Vol. 2/	Bake Eval. 2/
#/Bu.	g.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	cc.	
Chris	13751	63.5	30.3	35	63	2	74.7	1.69	11.6	S	58.1	.47	10.8	N	S	58.7	3	58.7 4-1/4
Justin	13462	62.0	34.0	51	46	3	75.4	1.72	11.8	S	60.4	.44	10.9	N	S	60.3	11	M-W* 120 S1C 95 C
Manitou	13775	62.5	30.3	33	65	2	74.6	1.67	12.1	S	58.5	.49	10.8	N	S-Q	58.3	5	M-W* 120 S1C 95 C
Marquis	3641	59.5	23.6	3	89	8	72.8	1.84	9.5	Q-U	53.8	.56	8.8	S	U	54.3	5	M-W* 120 C 95 C
Selkirk	13100	61.0	32.5	32	65	3	74.5	1.79	11.3	S	59.7	.47	10.5	N	S	58.7	4	M-W* 110 95 C
Thatcher	10003	61.0	25.3	3	93	4	73.0	1.69	11.5	Q	59.1	.53	10.8	N	Q	58.1	5	M-W* 120 S1C 90 C
RL 4200	63.5	33.6	51	47	2	75.5	1.68	11.6	S	57.2	.49	10.7	N	S-Q	59.3	4	M-W* 105 C 90 C	
II-55-11	13773	64.0	37.7	59	37	4	75.8	1.77	12.3	VS	59.2	.46	11.3	N	S	61.9	6	M 105 S1C 90 C
II-55-16	64.0	38.6	69	28	3	76.3	1.66	11.2	VS	59.2	.46	10.2	N	S	63.3	4	M-W* 105 S1C 95 C	
II-56-40	63.0	36.5	52	46	2	75.5	1.76	11.0	S	60.1	.46	10.1	N	S	57.2	10	M-W* 105 S1C 90 C	
II-59-91	63.0	32.1	47	52	1	75.3	1.69	11.4	S	59.7	.43	10.4	N	S	58.7	7	M-W* 110 S1C 95 C	
61-107	13937	63.0	37.9	65	33	2	76.2	1.69	11.9	VS	56.3	.50	11.2	S-N	U	59.7	3	59.7 4-1/4
ND 363-1	13828	63.0	35.5	63	35	2	76.1	1.82	12.4	VS	60.4	.45	11.3	N	S	58.7	7	M-W* 105 C 90 C
ND 478	62.5	35.5	67	32	1	76.3	1.80	12.6	S	61.6	.32	11.9	N	VS	62.3	5	S-M 115 C 90 C	
ND 479	62.0	35.7	67	31	2	76.3	1.77	11.6	S	57.2	.48	10.8	N-S	Q	61.9	2	M-W 110 C 90 C	
Wisc. 261	62.5	33.3	43	53	4	75.0	1.71	11.2	S	60.8	.32	10.5	N	VS	59.3	6	M-W* 105 S1C 95 C	
Wisc. 270	62.5	35.2	59	39	2	75.9	1.70	11.2	S	59.1	.40	10.1	N-S	S	60.0	7	M 110 C 95 C	
Wisc. 271	62.5	33.7	43	54	3	75.0	1.72	11.3	S	60.4	.42	10.4	N	S	59.7	6	M 100 90 C	
																	S-Q	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, SI - Slight Wall, CL - Close, H - Harsh.

* M-W S1D

TABLE 8
QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES
St. Paul, Minnesota

1967 CROP												
Variety or Sel. No.	C. I. No.	T.W. $\frac{1}{L}$	1000 Kwt.	Kernel Lg.	Size Med.	Pot. Sm.	Wt. Yld.	Kern. Pre.	Wt. 2/	Flr. Ext.	Min. @ 65% Ex.	
		#/Bu.	g.	%	%	%	%	%	%	Per. 2/	Per. 4/	
Chris	13751	63.5	29.7	40	57	3	74.9	1.84	14.8	57.5	.51	
Justin	13462	63.0	30.3	40	57	3	74.9	1.86	14.3	57.5	.48	
Manitou	13775	62.5	27.5	39	57	4	74.8	1.87	14.8	57.9	.46	
Marquis	3641	60.5	26.8	23	71	6	73.9	1.98	12.3	54.1	.55	
Selkirk	13100	59.0	30.4	39	57	4	74.8	2.02	14.3	58.2	.50	
Thatcher	10003	60.5	25.6	12	81	7	73.3	1.89	13.7	S-Q	.51	
RL 4200	62.5	29.9	32	65	3	74.5	1.93	14.3	S	56.3	.49	
II-55-11	13773	63.5	37.5	50	46	4	75.3	1.84	14.1	S	.49	
II-55-16	63.0	37.3	56	41	3	75.7	1.83	13.5	S	56.2	.49	
II-56-40	62.0	34.1	39	57	4	74.8	1.91	12.9	S	59.2	.45	
II-59-91	62.0	31.4	40	57	3	74.9	1.84	13.8	S	56.9	.46	
61-107	13937	61.0	36.0	53	43	4	75.5	1.82	13.5	S	55.1	.49
ND 363-1	13828	60.5	33.1	48	49	3	75.3	1.98	15.8	S	57.2	.46
ND 478	59.5	31.3	47	50	3	75.2	1.92	15.7	S	61.1	.38	
ND 479	61.0	31.2	51	45	4	75.4	1.95	14.5	S	59.2	.46	
Wisc. 261	61.0	31.1	31	64	5	74.3	1.81	13.8	S	61.2	.41	
Wisc. 270	61.0	33.1	45	51	4	75.1	1.86	13.1	S	61.4	.42	
Wisc. 271	60.5	32.3	35	61	4	74.6	1.89	14.6	S	61.3	.32	
										13.8	N	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, SI - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, SI - Slightly, C - Close, H - Harsh.

TABLE 9
QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES
Waseca, Minnesota

1967 CROP

Variety or Sel. No.	C. I. No.	T. N. 1/	1000 Kwt.	Kernel Lg.	Size Med. Sm.	Pot. Yld.	Wht. Min. 2/	Kern. Pro. 2/	Fir. Ext. 2/	Min. 65% Ex. 2/	Flr. Pro. 2/	Mig. Char. 2/	Mix. Abs. 2/	Bake Pat. 2/	Crumb Abs. 2/	Dough Time 2/	Char. 2/	Color 2/	Grain Vol. 2/	Loaf Grain 2/	Bake Eval. 2/
																				cc.	
Chris	13751	63.5	28.7	40	58	2	74.9	1.76	15.0	S	61.0	.44	14.5	N	S	64.2	3-1/2	S	105	80 0I	200 S
Justin	13462	61.0	27.2	13	81	6	73.4	1.80	14.7	S	60.6	.43	14.1	N	S	64.2	6	S	90	90 0I	200 S
Manitou	13775	61.0	26.2	21	75	4	73.9	1.77	14.4	S	61.8	.46	14.0	N	S	63.2	4	S	95	95 S10	195 S
Marquis	3641	58.5	22.8	1	86	13	72.4	1.82	12.1	Q	58.2	.38	11.4	N-S	S-Q	59.7	4-1/2	M	100 C	90 T	177 Q
Selkirk	13100	59.0	27.8	21	71	8	73.7	1.84	13.2	S	61.4	.47	12.8	N-S	S-Q	62.5	4-1/2	M	95 C	90 T	170 S-Q
Thatcher	10003	59.5	21.2	1	89	10	72.6	1.72	12.7	Q	61.0	.49	11.1	N	S-Q	61.3	4-3/4	M	100 C	90 T	182 S-Q
RL 4200	61.0	28.7	35	62	3	74.6	1.88	14.5	S	59.1	.49	14.0	N	S-Q	63.5	4	M-S	95 C	80 0I	202 S	
II-55-11	64.5	35.3	49	47	4	75.3	1.79	13.9	S	59.7	.44	13.6	N	S	63.8	4-3/4	M-S	95 C	90 0I	199 S	
II-55-16	64.5	36.4	61	35	4	75.9	1.73	13.9	S	58.9	.44	13.4	N	S-Q	65.0	4	S-M	110 C	100	200 S	
II-56-40	63.0	34.4	43	54	3	75.0	1.78	13.4	S	61.0	.43	13.0	N	S	62.8	6	S-M	105	95 C	200 S-Q	
II-59-94	62.5	29.5	38	57	5	74.7	1.71	13.2	S	59.7	.43	12.5	N	S	64.7	7	S-M	115	90 C	175 Q	
61-107	13937	61.5	32.8	39	55	6	74.7	1.64	14.0	S	58.2	.46	13.8	N-S	Q-S	64.2	5	M-S	105 S1C	90 S10	192 S
ND 363-1	13828	60.5	27.8	27	69	4	74.2	1.93	14.4	S	59.5	.49	14.0	N-S	Q	65.0	6	M-S	100 C	90 S10	187 S-Q
ND 478	62.0	32.2	53	45	2	75.6	1.87	15.8	S	59.0	.43	15.1	N-S	S-Q	68.5	7	S	105 C	80 O	218 S	
ND 479	62.5	33.2	62	36	2	76.0	1.81	14.2	VS	59.5	.43	13.8	S-N	Q-U	67.0	3	M	105 S1C	90 O	182 Q	
Wisc. 261	62.0	28.3	17	77	6	73.6	1.80	13.7	S	59.9	.41	13.3	N-S	S-Q	64.4	7	M-S	100 C	80 0I	197 Q-S	
Wisc. 270	61.0	29.8	25	67	8	73.9	1.81	13.5	S	58.6	.41	12.9	S	Q-U	64.2	8	M-S	105 C	90 S10	190 Q	
Wisc. 271	62.0	27.5	16	78	6	73.5	1.77	14.6	S	59.7	.41	13.8	N-S	S-Q	64.2	9	S-M	105 C	95 S10	200 Q	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Doll, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Harsh.

TABLE 10

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Bozeman, Montana

1967 CROP

Variety or Sel. No.	C.I. No.	T.W. Kwt.	1000 Kernel Size	Pat. Eg. Ned. Sm.	Wht. Yld.	Kern. Pro.	Whit. Char.	Fhr. Ext.	Min. @ 65% Ex.	Flr. Pro.	Mfg. Char.	Mix. Pat.	Bake Abs.	Dough Abs.	Crumb Char.	Grain Vol.	Loaf Vol.	Bake 3/
		1/#/Bu.	g.	%	g.	%	g.	2/	2/	2/	4/	2/	2/	2/	8/	8/	cc.	
Chris.	13151	60.5	23.5	3	88	9	72.7	1.73	15.4	57.7	.47	14.9	N	65.3	4	65.3	3-3/4	
Justin	13462	58.5	25.8	7	85	8	73.0	1.83	16.1	54.0	.48	15.3	Q-S	67.3	5	67.3	4-1/2	
Manitou	13775	60.0	23.3	2	90	8	72.7	1.80	15.8	57.9	.46	14.7	N	63.5	3	63.5	3-1/2	
Marquis	38641	57.5	22.4	2	86	12	72.5	1.93	15.1	55.1	.50	15.1	N	65.7	6	65.7	5-1/4	
Selkirk	13100	56.0	24.6	3	86	11	72.6	1.89	15.4	57.1	.51	14.9	N	65.7	4	65.7	4	
Thatcher	10003	59.0	22.5	2	88	10	72.6	1.82	15.5	57.5	.50	14.8	N	65.0	4	65.0	3-1/2	
RL 4200	59.5	25.2	4	90	6	72.9	1.76	15.7	57.1	.48	14.9	N	63.5	3	63.5	3-1/4		
II-55-11	61.5	29.1	14	79	7	73.4	1.73	15.0	58.5	.47	13.9	N	64.2	5	64.2	4-3/4		
II-55-16	61.0	30.6	19	72	9	73.5	1.60	14.4	58.3	.47	13.5	N	63.2	4	63.2	4-3/4		
II-56-40	59.5	28.9	12	80	8	73.2	1.79	14.5	57.5	.48	13.8	N	62.5	6	62.5	7		
III-59-91	58.0	24.6	4	86	10	72.7	1.78	15.3	55.0	.51	14.7	N-S	65.7	6	65.7	6-3/4		
61-107	13937	60.0	33.1	21	73	6	73.8	1.93	15.1	55.2	.47	14.7	N-Q-S	64.2	4	64.2	4	
ND 363-1	13828	59.5	27.3	12	79	9	73.2	1.90	15.5	59.2	.49	14.8	S	66.3	5	66.3	4-1/2	
ND 478	58.5	28.2	7	87	6	73.1	1.85	15.2	57.3	.52	14.6	N-S	66.3	5	66.3	4-1/2		
ND 479	57.5	25.3	5	87	8	72.9	1.77	15.5	55.2	.54	14.8	N-S	66.3	3	66.3	3		
Wisc. 261	56.0	22.7	1	77	22	72.0	1.87	15.3	55.9	.56	14.4	N	65.0	7	65.0	8-1/2		
Wisc. 270	55.0	24.5	3	84	13	72.5	1.74	14.9	53.3	.54	13.9	N-S	66.3	9	66.3	11-3/4		
Wisc. 271	54.5	21.6	0	75	25	71.8	1.97	15.5	55.2	.57	14.5	N	65.3	7	65.3	8-1/2		

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, Sl - Slightly, C - Close, H - Harsh.

9/ 0 - Open, I - Irregular, S - Soggy, T - Thick Wall, Sl - Slightly, C - Close, H - Harsh.

10/ 0 - Open, I - Irregular, S - Soggy, T - Thick Wall, Sl - Slightly, C - Close, H - Harsh.

TABLE 11
QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Havre, Montana

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 Kernel Lg.	Kernel Size Med. Sm.	Pet. Wht. Min. 2/ 2/	Wht. Kern. Char. 3/ 3/	Flr. Ext. 2/ 2/	Min. 65% Ex. Flr. Char. 3/ 3/	Mlg. Per. 4/ 4/	Mix. Pat. 2/ 2/	Bake Abs. Time 2/ 2/	Dough Abs. Time 6/ 6/	Crumb Char. 7/ 7/	Crumb Grain 8/ 8/	Bake Eval. 3/ 3/	c.c.	
#/Bu.	g.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Chris	13751	56.5	17.5	0	71	29	71.6	1.92	18.9	5	59.0	.64	17.7	N	S-Q	67.9	5-1/4
Justin	13462	57.0	21.5	1	86	13	72.4	1.88	18.4	S	59.4	.53	17.7	N	S	68.8	5-3/4
Manitou	13775	55.5	17.5	0	70	30	71.5	1.81	18.2	Q-S	57.5	.55	17.0	N	S-Q	67.0	5-1/4
Marquis	3641	56.5	19.2	0	75	25	71.5	1.65	18.7	S	55.6	.55	17.0	N	Q	67.9	6
Selkirk	13100	52.5	19.4	0	70	30	71.5	1.83	17.1	Q-S	58.7	.52	16.6	N	S	67.9	5-3/4
Thatcher	10003	55.5	17.8	0	66	34	71.3	1.88	18.7	Q-S	57.5	.62	17.6	N	Q	67.9	6
RL 4200	57.0	20.6	0	84	16	72.2	1.72	18.1	S	57.5	.56	17.1	Q	64.7	4	3-1/2	
II-55-11	13773	60.0	24.2	0	88	12	72.4	1.81	17.7	S	55.2	.49	16.6	N	VS	66.3	7-1/4
II-55-16	59.0	24.8	0	84	16	72.2	1.78	17.1	S	57.8	.49	16.1	N	S	67.0	8-1/4	
II-56-40	58.0	24.0	1	87	12	72.5	1.62	16.9	S	57.7	.44	16.4	N-S	Q	64.2	13-1/4	
II-59-91	56.0	20.1	0	82	18	72.1	1.72	18.0	S	56.1	.50	17.1	N	Q	68.2	10-1/4	
61-107	13937	57.5	23.4	1	86	13	72.4	1.75	17.8	S	57.1	.47	17.2	N	S	68.5	6-3/4
ND 363-1	13828	56.5	20.6	1	82	17	72.2	1.82	18.6	S	58.7	.51	18.1	S	7-1/2	9	
ND 478	56.5	22.4	0	88	12	72.4	1.80	18.0	S	59.2	.48	17.4	N	VS	70.3	10-1/4	
ND 479	57.5	23.3	0	89	11	72.5	1.85	17.3	S	57.9	.44	16.5	N	VS	68.5	5	
Wisc. 261	57.5	18.9	0	60	40	71.0	1.75	17.8	S	58.5	.45	17.2	N	VS	67.6	10-1/4	
Wisc. 270	58.0	21.4	0	80	20	72.0	1.73	17.6	S	57.1	.42	17.0	N-S	Q	67.9	10	
Wisc. 271	56.0	18.5	0	55	45	70.8	1.76	18.0	S-Q	58.2	.47	17.3	N	S	67.9	10-1/2	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

3/ N - Normal, H - Hard, S - Soft.

4/ Refer to Reference Mixograms for numerical curve pattern.

5/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

6/ C - Creamy, G - Gray, D - Dull, SI - Slightly, V - Very, B - Bright, W - White.

7/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, SI - Close, H - Harsh.

8/ 105 SIC 80 IO 205 S-Q

105 SIC 80 IO 229 S-Q

105 SIC 80 IO 210 S-Q

TABLE 13

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Carrington, North Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. 1/	1000 Kut. #/Bu.	Kernel Lg. %	Kernel Med. %	Kernel Sm. %	Pot. Yld. 2/	Wht. Min. %	Wht. Pro. 2/	Kern. Char. 3/	Flr. Ext. 2/	Min. @ 65%Ex. 2/	Flr. Char. 4/	Mlg. Per. 3/	Min. Par. 2/	Mix. Abs. 2/	Bake Time min. %	Crumb Grain Vol. 8/	Crumb Grain Vol. 8/	Dough Char. 7/	Dough 6/	Crumb Color 7/	Loaf Bake Eva. 3/	Loaf Bake Eva. 3/	cc.	
Chris	13751	62.5	31.1	38	59	3	74.8	14.2	15.7	S	56.3	.40	14.3	N	S	66.0	4	66.0	4	S-M	120	SIC	90	S10	195	S
Justin	13462	61.5	34.6	56	41	3	75.7	1.60	15.3	S	56.5	.43	14.2	N	S	67.0	5	67.6	5	M-S	115	S10	90	S10	188	S
Manitou	13775	63.0	31.2	40	57	3	74.9	1.52	15.4	S	57.9	.41	14.3	N	S	69.4	3	64.4	2-3/4	M-S	105	S10	80	194	Q	
Marquis	3641	60.5	32.2	25	67	8	73.9	1.51	14.5	S-Q	56.7	.44	13.6	N	S	64.2	3	64.2	3	M	115	SIC	95	182	Q	
Selkirk	13100	59.5	35.2	37	58	5	74.6	1.59	14.9	S	58.4	.43	14.6	N	S	65.3	4	65.3	5-1/2	M	110	S10	95	S10	168	S-Q
Thatcher	10003	61.0	26.7	11	81	8	73.2	1.52	14.3	Q	57.4	.45	13.1	N	S-Q	63.5	4	63.5	4	M	110	SIC	70	01	180	Q
RL 4200	61.5	32.7	45	53	53	2	75.2	1.48	15.4	S	56.3	.42	14.5	N	S	64.2	3	64.2	3	M	125	C	75	01	185	U
II-55-11	13773	63.0	40.3	60	37	3	75.9	1.56	15.2	S	55.6	.43	13.9	N	S-Q	66.6	5	66.6	4	M-S	125	SIC	65	01	205	Q
II-55-16	64.0	41.2	62	35	3	76.0	1.47	14.7	S	55.0	.42	13.7	N	Q	67.0	5	67.0	4	M-S	115	95	95	183	S		
II-56-40	62.0	35.5	52	45	3	75.5	1.53	15.4	S	54.6	.42	14.6	N-S	U	65.0	6	65.0	8	M-S	120	90	1	218	S		
II-59-91	60.5	32.3	31	64	5	74.3	1.51	15.1	S	54.5	.47	13.7	N	U	65.7	6	65.7	8	S-M	110	W	100	100	185	S	
61-107	13937	61.0	42.0	53	43	4	75.5	1.44	15.0	S	54.6	.44	14.4	N	U	65.7	4	65.7	4	M	120	W	100	100	190	S
13828	63.0	39.2	76	23	1	76.8	1.55	15.4	VS	57.2	.42	14.3	N	S	67.0	4	67.0	4	M	105	105	105	200	S		
ND 478	61.5	36.4	67	31	2	76.3	1.60	16.4	S	56.5	.43	15.2	N	S	67.9	5	67.9	5	S-M	105	80	80	204	S-Q		
ND 479	61.5	36.6	61	37	2	76.0	1.60	15.4	S	56.3	.44	14.8	N-S	Q	67.6	3	66.6	2-3/4	W	120	SIC	90	01	174	U-Q	
Wisc. 261	62.5	34.2	31	61	8	74.2	1.53	14.3	S	59.9	.43	12.9	N	S	64.2	5	64.2	7-1/4	M-S	115	SIC	90	0	185	S-Q	
Wisc. 270	61.0	37.0	52	44	4	75.4	1.56	14.3	S	58.9	.40	12.9	N	S	65.0	6	64.0	8	S-M	125	S10	95	S10	206	S-Q	
Wisc. 271	62.0	33.8	33	63	4	74.5	1.50	14.3	S	60.9	.41	13.3	N	S	65.0	5	65.0	6-1/2	M-S	105	C	95	187	S		

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

3/ N - Normal, H - Hard, S - Soft.

4/ Refer to Reference Mixograms for numerical curve pattern.

5/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

6/ G - Creamy, G - Gray, D - Dull, SI - Slightly, V - Very, B - Bright, W - White.

7/ C - Irregular, S - Soggy, T - Thick Wall, SI - Slightly, C - Close, H - Harsh.

TABLE 14

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Dickinson, North Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T. M. 1/	1000 Kernels 1/2. Kst.	Kernel Size 1/2. Med. Sm.	Pot. Yld.	Wt. Min. 2/ 2/	Wt. Max. 2/ 2/	Kern. Char. 3/ 3/	Flr. Ext. 2/ 2/	Min. 2/ 65% Ext. 2/ 2/	Flr. Ext. 2/ 2/	Mlg. Per. 2/ 2/	Mix. Abs. 2/ 2/	Mix. Pat. 2/ 2/	Mix. Abs. 2/ 2/	Mix. Pat. 2/ 2/	Dough Char. 2/ 2/	Crumb Color 2/ 2/	Crumb Grain 8/ 8/	Loaf Vol. 3/ 3/	Bake Time cc.		
Chris	13751	59.0	23.5	2	94	4	72.9	1.43	10.4	S	61.7	.42	15.4	N	S	66.3	5	66.3	2-1/2	S	115 S1C	90 S10	186 S
Justin	13462	61.5	29.7	.22	76	2	74.0	1.50	15.7	S	60.3	.36	16.1	N	S	68.5	7	68.5	2	S	100	55 OH	168 S-Q
Manitou	13775	60.5	23.9	.4	92	4	73.0	1.43	13.9	S	61.2	.41	15.3	N	S	65.3	5	65.3	2	S	90 C	50 CI	185 S
Marquis	3641	61.0	28.2	.15	83	2	73.7	1.46	14.9	S	60.9	.40	12.2	S	S	65.2	5	65.2	2-1/4	S	90	75 S	175 S
Selkirk	13100	60.5	29.7	.12	86	2	73.5	1.44	15.0	S	62.1	.37	17.3	N	S	65.0	4-1/2	N-S	105	90 T	172 S-Q	.	
Thatcher	10003	62.0	26.0	.4	94	2	73.1	1.39	15.6	S	57.7	.37	14.7	N	S	63.2	4	63.2	4-1/2	S	95	80 CI	208 S-Q
RL 4200	60.0	24.8	.5	92	3	73.1	1.49	17.1	S	58.9	.42	16.4	N	Q-S	65.7	4	65.7	3-1/2	S	100 C	90 0	193 Q	
II-55-11	13773	63.5	31.7	.13	85	2	73.6	1.39	15.7	S	60.6	.41	15.0	N	S	66.3	6	66.3	7	S	100	80 10	192 S-Q
II-55-16	63.0	32.2	.27	71	2	74.3	1.43	14.9	S	58.7	.42	14.0	N	Q-S	66.6	7	66.6	6-1/2	S	90	90 0	209 Q	
II-56-40	61.0	30.2	.8	90	2	73.3	1.42	15.2	S	59.5	.40	14.6	N	S	63.8	10	63.8	13-1/2	VS	105	80 01	220 Q	
II-59-91	59.5	27.4	.4	93	3	73.1	1.51	15.9	S	58.4	.45	14.8	N	Q	67.9	7	67.9	9-1/4	S	100	90	188 Q	
61-107	13937	59.5	33.8	.28	70	2	74.3	1.43	15.5	S	58.4	.40	15.0	N	S-Q	66.3	5	66.3	5-3/4	S	100	90 0	195 S
ND 363-1	13828	59.0	28.1	.9	88	3	73.3	1.54	16.8	S	60.6	.43	16.2	N	S-Q	66.0	7	66.0	7	S	95	80 10	224 S-Q
ND 478	60.5	28.3	.10	88	2	73.4	1.63	17.0	S	61.2	.41	16.0	N	S	67.3	8	67.3	8-1/2	S	105	80 0	195 S-Q	
ND 479	60.5	27.9	.12	86	2	73.5	1.58	16.8	S	57.9	.40	16.2	N-S	Q	67.6	4	67.6	3-1/4	M	100	90 C	162 U	
Wisc. 261	60.0	25.2	.1	90	9	72.6	1.51	16.0	S-Q	60.7	.43	15.5	N	S	65.3	7	65.3	8	S-M	95 C	95	194 S	
Wisc. 270	57.5	25.5	.2	92	6	72.8	1.58	16.3	S-Q	59.3	.42	15.9	N	S-Q	67.6	9	67.6	12	S	80 DC	70 01	237 U	
Wisc. 271	59.0	24.4	.1	89	10	72.6	1.57	16.6	S-Q	60.6	.44	15.5	N	S-Q	66.3	8	66.3	8-1/2	S-M	100 C	95 S10	185 S	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Harsh.

TABLE 15

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Fargo, North Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T. W. 1/	1000 Kwt.	Kernel Lg.	Size Med. Sn.	Pot. Yld.	Wht. Min. 2/	Wht. Pro. 2/	Kern. Char. 2/	Flr. Ext. 2/	Flr. Min. 65% Ex. 2/	Mg. Pro. 4/	Mg. Char. 4/	Mg. Per. 4/	Mix. Abs. 2/	Mix. Pat. 2/	Mix. Abs. 2/	Bake Time 2/	Dough Char. 2/	Crumb Color 2/	Grain Vol. 8/	Loaf Grain 8/	Bake Eval. 3/
Chris	13751	59.5	21.2	3	92	5	72.9	1.65	17.2	S	60.9	.42	15.0	N	S	65.0	4-1/4	M-S	95 C	95 H	173	S	
Justin	13462	61.5	28.0	12	85	3	73.5	1.69	16.0	S	60.3	.42	15.6	N	S	66.3	5-1/2	M-S	100	90 T	152	S-Q	
Manitou	13775	60.0	22.4	1	54	5	72.8	1.69	16.5	S	59.0	.47	15.9	N	Q-S	64.4	4	S-M	95 S1C	95 T	173	S	
Marquis	3641	60.5	25.4	3	91	6	72.9	1.68	15.2	S	57.4	.45	14.7	N	Q-U	64.4	5	M-S	100	90 T	149	S-Q	
Selkirk	13100	58.0	27.1	7	89	4	73.2	1.75	15.7	S	59.7	.46	14.7	N	Q-S	63.5	4-1/2	M	90	90 T	159	S-Q	
Thatcher	10003	60.0	22.8	2	91	7	72.8	1.72	16.2	S	58.6	.47	14.5	N	Q	63.2	4	S-M	95 S1C	90 T	170	S	
RL 4200	60.0	25.3	3	94	7	73.0	1.64	16.9	S	59.0	.43	15.1	N	S	63.8	3-1/2	M-S	100 S1C	80 T	166	Q		
II-55-1-1	13773	63.0	30.4	10	87	3	73.4	1.68	15.2	S	58.3	.44	13.8	N	S-Q	62.3	7	M-S	6-1/2	95 T	189	S-Q	
II-55-16	62.5	30.8	12	86	2	73.3	1.51	14.4	S	56.2	.43	13.4	N	Q	62.5	6	M-S	5-1/2	110	95 T	190	S-Q	
II-56-40	62.0	28.7	8	89	3	73.3	1.47	14.8	S	58.8	.43	14.1	N	S-Q	62.5	9	S	62.5	11	120 S1C	80 O	203 Q-S	
II-59-91	60.5	24.1	3	93	4	73.0	1.54	15.6	S	56.2	.46	14.4	N-S	U	65.0	8-3/4	M-S	100	95 T	180	S		
61-107	13937	61.5	34.1	38	61	1	74.9	1.39	15.5	S	57.4	.40	14.4	N-S	U	63.8	4	S-M	63.8	4-1/4	173	S-Q	
ND 363-1	13828	59.5	27.5	15	82	3	73.6	1.63	16.0	S	59.1	.45	15.1	N	S-Q	65.7	7	S-M	7-1/4	105	90 T	179	S
ND 478	58.5	25.6	6	91	3	73.2	1.69	16.1	S	57.6	.45	15.7	N-S	Q	67.0	9	S-M	105 S1C	95 T	173	S		
ND 479	60.0	28.0	15	82	3	73.6	1.62	15.3	S	56.0	.44	14.9	N-S	Q-U	68.2	5	M-W	68.2	3-1/2	100 C	90 T	162 Q	
Wisc. 261	61.0	25.2	3	91	6	72.9	1.50	15.0	S	58.6	.41	14.0	N	S	63.5	9	M-S	110 C	90 T	174	Q		
Wisc. 270	60.5	27.4	5	92	3	73.1	1.47	14.5	S	57.7	.41	13.5	N-S	Q	65.7	9	M-S	105 S1C	95 T	170	Q		
Wisc. 271	60.5	24.3	1	92	7	72.7	1.44	14.8	S	57.2	.41	13.7	N-S	Q	63.5	10-1/2	M-S	100 C	90 T	189	S-Q		

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

O - Open, I - Irregular, S - Soggy, T - Thick Wall, SI - Slightly, C - Close, H - Harsh.

TABLE 16

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Langdon, North Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 Lg. Med. Sm. Yld.	Kernel Size 2/ Min.	Pot. 2/ Max.	Wht. 2/ Pro. Char.	Kern. 2/ Ext.	Flr. 2/ Ext.	Min. @ 2/ Ext.	Flr. 2/ Ext.	Mlg. 2/ Ext.	Mlg. 2/ Ext.	Mix. 2/ Ext.	Mix. 2/ Ext.	Bake Abs. Time 2/ Ext.	Bake Abs. Time 2/ Ext.	Dough Abs. Time 2/ Ext.	Dough Abs. Time 2/ Ext.	Crumb Color 2/ Ext.	Crumb Color 2/ Ext.	Loaf Grain 2/ Ext.	Loaf Grain 2/ Ext.	Bake Vol. 2/ Ext.
		#/Bu.	g.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	cc.
Chris	13751	62.0	26.7	16	82	2	73.7	1.39	15.8	S	57.2	.44	15.5	N	S-Q	66.6	4-1/4	M-S	105 C	90 I	160	S	
Justin	13462	62.0	34.0	50	48	2	75.4	16.1	16.1	S	56.5	.39	15.5	N	S	67.9	6-3/4	M-S	100 S1C	90 I	152	S	
Manitou	13775	61.5	26.9	15	82	3	73.6	1.41	16.1	S	58.4	.37	15.3	N	S	64.7	3-3/4	S-M	105 S1C	80 01	171	Q	
Marquis	3641	63.0	29.8	34	64	2	74.0	1.29	14.2	S	55.3	.39	13.1	N	Q	64.2	3-1/4	M-W	105 S1C	90 T	155	Q	
Selkirk	13100	61.0	32.6	37	62	1	74.8	1.37	14.7	S	59.0	.39	13.9	N	S	63.2	4-1/2	M-W	105 C	90 T	155	Q-S	
Thatcher	10003	62.5	28.7	17	82	1	73.8	1.33	15.3	S	58.3	.38	14.5	N	S	63.5	4	S-M	105 C	90 01	169	S-Q	
RL 420	61.5	31.2	25	74	1	74.2	1.44	16.7	S	57.3	.39	16.4	N	S	64.7	3	S-M	105 C	90 10	166	S-Q		
II-55-11	13773	63.5	35.7	47	52	1	75.3	1.41	15.9	S	56.4	.41	15.1	N	S-Q	65.7	6	S-M	105 S1C	90 01	165	S	
II-55-16	63.5	38.6	53	46	1	75.6	1.38	15.5	S	56.2	.40	15.2	N	S	67.0	6	M-S	110 C	90 01	160	S-Q		
II-56-40	62.0	36.2	42	57	1	75.1	1.41	16.0	S	57.1	.38	15.3	N	S	65.0	9	M-S	115 0	11-3/4	184	Q		
II-59-91	62.0	28.8	22	76	2	74.0	1.45	16.1	S	54.3	.44	15.0	N-S	Q-U	66.0	7	M-S	110 S1C	95 T	155	S		
61-107	13937	62.5	39.4	55	44	1	75.7	1.25	16.0	S	55.0	.40	15.2	N	Q	64.4	4	M-S	105 C	90 I	160	S-Q	
ND 333-1	13828	61.0	32.5	28	71	1	74.4	1.55	16.5	S	57.8	.41	15.5	N	S	66.0	6	S-M	100 C	90 01	166	S	
ND 478	60.5	32.6	39	50	1	74.9	1.52	16.4	S	56.9	.42	15.9	N-S	Q	67.9	7	S-M	105 C	90 T	153	Q		
ND 479	61.5	32.9	44	55	1	75.2	1.47	15.9	S	55.5	.40	15.2	N-S	Q	66.3	4	M-W	105 C	90 T	156	Q		
Wisc. 261	61.5	27.6	9	86	5	73.2	1.39	14.4	S-Q	56.7	.40	13.6	N	S	62.5	9	M-S	95 S1C	98 T	175	Q		
Wisc. 270	60.0	29.5	15	82	3	73.6	1.45	15.3	S	55.2	.40	14.1	N-S	Q-U	65.7	10	S-M	100	95 S10	185	Q-S		
Wisc. 271	60.0	27.2	12	79	9	72.9	1.49	15.3	S	57.4	.40	14.4	N	S	64.2	8	S-M	95 C	90 T	184	Q-S		

1/
2/
3/
4/
5/
6/
7/
8/

Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/
14% moisture basis.3/
S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.4/
N - Normal, H - Hard, S - Soft.5/
Refer to Reference Mixograms for numerical curve pattern.6/
B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.7/
C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.
8/
O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Harsh.

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Williston, North Dakota

1967 CRC

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 Kernel Lg. Med.	Size S. u.	Pot. N. u.	Wht. N. u.	Kern. Pr. 2/	Min. Char. 2/	Flr. E.t. 2/	Min. @ 65% En. 2/	Flr. Pro. 2/	Mig. Char. 2/	Mig. Per. 2/	Mix. Abs. 2/	Mix. Pat. 2/	Bake Time 2/	Dough Char. 2/	Crumb Color 2/	Crumb Grain 8/	Loaf Vol. 8/	Bread Eval. 2/	cc.				
Chris	13751	58.5	21.6	1	88	11	72.5	1.47	17.4	S	60.2	.48	16.8	N	S-Q	67.0	6	67.0	5-1/4	S	105	10	214	S		
Justin	13462	57.0	24.4	3	91	6	72.9	1.56	17.5	S	59.4	.43	16.8	N	S	67.3	6	67.3	5-3/4	S	105	10	211	S		
Manico	13775	56.0	21.3	1	86	13	72.4	1.58	17.7	S	58.8	.47	16.8	N	Q-S	67.3	5	67.3	5-1/4	S	105	80	208	S-Q		
Marquis	3641	57.5	24.6	2	90	8	72.7	1.52	18.8	S	58.1	.45	16.3	N	Q-S	67.9	5	67.9	5	S	110	70	200	S-Q		
Selkirk	13100	56.5	26.7	4	90	6	72.9	1.49	16.3	S	61.1	.45	15.6	N	S	67.0	5	67.0	6	N-S	105	C	95	184	S	
Thatcher	10003	57.5	22.2	2	89	9	72.7	1.54	17.2	S	53.1	.44	16.6	N	S-Q	67.0	6	67.0	5	S	110	C	85	0	214	S
RL 4200	58.0	23.7	2	91	7	72.8	1.53	16.9	S	58.8	.42	16.3	N	S	67.5	4	67.5	5	S	100	C	80	10	203	S	
II-55-11	13773	61.0	31.6	14	83	3	73.6	1.47	16.1	S	59.2	.43	15.8	N	S	65.3	6	65.3	6-1/4	S	110	SIC	85	10	224	S-Q
II-55-16	60.5	30.9	14	82	4	73.5	1.46	16.8	S	57.8	.43	16.1	N	Q-S	67.0	6	67.0	6	S	110	SIC	80	0	209	S	
II-56-40	58.5	27.2	4	86	10	72.7	1.49	16.0	S	58.8	.41	15.5	N	S	64.7	10	64.7	14	S-M	100	SIC	70	10	233	Q	
II-56-91	59.5	24.6	4	92	4	73.0	1.52	16.5	S	56.4	.50	16.1	N-S	Q-U	68.5	8	68.5	9	S-M	95	SIC	90	0	213	Q-S	
61-107	13937	59.0	31.7	18	79	3	73.3	1.40	17.3	S	58.3	.40	16.6	N	S	67.9	6	67.9	5-1/4	S	110	80	0	223	S	
ND 363-1	13828	59.0	28.2	11	86	3	73.4	1.46	17.1	S	59.4	.41	16.7	N	S	67.9	7	67.9	8-1/2	S	110	SIC	85	0	213	S-Q
ND 478	57.0	27.2	7	88	5	73.1	1.58	17.0	S	58.5	.45	16.6	N-S	Q	68.5	8	68.5	9-1/2	S	110	70	0	215	Q		
ND 779	58.5	28.2	9	87	4	73.3	1.50	16.8	S	55.7	.42	15.4	S-N	U	69.1	5	69.1	4-1/4	S-M	115	SIC	90	0	175	Q	
Wisc. 261	59.0	25.5	1	89	10	72.6	1.44	17.0	S	59.9	.45	16.2	N-S	S	67.3	7	67.3	8-1/4	S	105	SIC	85	0	209	Q-S	
Wisc. 270	59.5	25.6	2	91	7	72.8	1.49	17.0	S	57.8	.44	16.1	N-S	Q	68.5	7	68.5	10-1/2	S-M	105	SIC	85	0	223	Q-S	
Wisc. 271	58.5	24.3	1	89	10	72.6	1.49	17.0	S	59.7	.45	16.4	N	S	67.0	7	67.0	8-1/2	S	105	C	90	10	215	S-Q	

1/ Clean dry - subtract 14%BC. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellor, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ 0 - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Harsh.

TABLE 19

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Highmore, South Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. Kwt. 1/	1000 Kernel Lb.	Kernel Size Med. Sm.	Pol. Yld. 2/	Kht. Kern. Pre. 2/	Flr. Ext. 2/	Min. 3/	Flr. Ext. 2/	Mix. Per. 2/	Mix. Abs. 2/	Mix. Pat. 2/	Mix. Abs. 2/	Dough Char. 2/	Crumb Color. 2/	Crumb Grain Vol. 2/	Loaf Vol. 2/	Bake Eval. 2/	
	#/Bu	u.	u.	u.	u.	u.	u.	u.	u.	u.	u.	u.	u.	u.	u.	u.	cc.		
Chris	13751	61.5	19.5	9	59	73.4	1.90	17.0	58.4	.64	16.6	N	1-0	63.5	3	63.5	3	19- S-Q	
Justin	13462	60.0	28.5	16	81	3	73.7	2.07	16.3	57.2	.57	15.6	N	65.3	5	65.3	5	18- S-Q	
Manitou	13775	62.5	29.7	30	68	2	74.4	1.82	15.1	57.0	.55	15.1	N	62.3	3	62.3	3	185 S-Q	
Marquis	3641	59.5	24.0	1	93	6	72.5	2.11	16.5	53.2	.62	12.5	S-N	61.6	3	61.6	3	194 Q	
Selkirk	13100	58.5	28.0	7	39	+	73.4	2.02	15.5	57.8	.58	14.5	N	63.5	4	63.5	4	173 S	
Thatcher	10003	50.5	27.2	6	90	4	73.1	1.99	14.9	57.2	.59	13.8	N	62.8	3	62.8	3	188 S-Q	
RL 4200	62.0	31.5	33	66	1	74.6	1.90	16.2	53.7	.63	15.7	N	U-Q	64.2	3	64.2	3	182 S-Q	
II-55-11	62.0	33.9	30	67	3	74.4	1.91	15.6	56.3	.57	14.3	N	S-Q	63.8	4	63.8	4	193 S	
II-55-16	61.5	33.7	33	64	3	74.5	1.89	15.0	55.0	.53	14.0	N-S	Q-U	63.8	5	63.8	5	199 S	
II-56-40	61.5	32.6	31	66	3	74.4	1.90	16.1	55.0	.51	14.7	S-N	U-Q	64.4	6	64.4	6	227 Q	
II-59-91	58.5	26.3	5	91	4	73.1	2.01	16.2	S-Q	53.6	.59	14.9	S-N	U	67.3	7	67.3	7	202 Q
61-107	13937	62.0	36.5	53	45	2	75.6	1.85	15.4	VS	52.7	.53	14.7	S	63.2	4	63.2	4	95 S10
ND 363-1	13828	61.5	34.0	53	46	1	75.6	1.97	15.8	VS	54.2	.52	14.3	N-S	63.5	4	63.5	4	190 S
ND 478	59.0	30.6	31	67	2	74.5	2.01	16.4	S	54.6	.52	15.8	S	66.6	6	66.6	6	212 S	
ND 479	59.5	33.2	52	47	1	75.6	2.00	15.6	S	52.6	.49	14.7	S	64.7	3	64.7	3	172 Q-U	
Wisc. 261	60.5	27.9	4	91	5	73.0	1.89	15.8	S	53.6	.50	14.7	S	U-Q	63.8	6	63.8	6	194 Q
Wisc. 270	61.5	32.9	29	69	2	74.4	1.87	15.2	S	56.4	.44	14.4	S-N	Q	65.0	6	65.0	6	199 Q
Wisc. 271	60.5	28.7	5	90	5	73.0	1.86	15.8	S	55.6	.48	14.6	N-S	Q	64.4	6	64.4	6	194 Q

1/ Clean dry - subtract 1#/Bu. for dockage-free T.M.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, Sl - Slightly, C - Close, H - Harsh.

TABLE 20

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Watertown, South Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T. W. 1000 Kernels Lg. K.L.	Kernel Size Med. Sm.	Pot. Yld.	Wht. Min. Pro. Char.	Kern. Ext. 2/ 3/ 2/ 2/	Flr. 65%Ex. 2/ 2/ 2/ 2/	Mfg. Pro. Char. 1/ 1/ 1/ 1/	Flr. Min. @ 2/ 2/ 2/ 2/	Mfg. Abs. Pat. 2/ 2/ 2/ 2/	Bake Time 2/ 2/ 2/ 2/	Dough Char. 6/ 6/ 6/ 6/	Crumb Color 7/ 7/ 7/ 7/	Crumb Grain 8/ 8/ 8/ 8/	Loaf Vol. 8/ 8/ 8/ 8/	Bake Evap. 3/ 3/ 3/ 3/	
#/Bu.	g.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	cc.	
Chris	13751	60.0	24.3	3	93	4	73.0	1.57	16.9	S	57.1	.42	15.7	N-S	62.5	5	S-Q
Justin	13462	59.5	29.4	19	78	3	73.8	1.67	16.7	S	56.1	.43	15.0	N-S	65.4	7	S
Manitou	13775	60.0	25.8	4	93	3	73.1	1.59	1.2	S	57.1	.44	14.4	N-S	61.3	4	100 SIC
Marquis	3641	50.0	20.2	1	82	17	72.2	1.61	15.3	S	49.0	.52	14.2	S	60.3	5	100 SIC
Selkirk	13100	56.0	29.9	9	88	3	73.3	1.61	15.7	S	56.0	.45	14.9	N	62.8	7	100 SIC
Thatcher	10003	57.5	23.1	1	92	7	72.7	1.66	16.0	Q	54.8	.48	15.3	N	61.9	5	S-Q
RL 4200	60.5	29.3	10	89	1	73.5	1.62	16.2	S	55.1	.44	15.2	N	61.0	2	100 SIC	
II-55-11	13773	60.5	30.5	14	84	2	73.6	1.59	16.5	S	56.0	.45	15.4	N-S	61.3	7	100 SIC
II-55-16	60.5	32.3	20	78	2	73.9	1.59	15.8	S	54.2	.45	14.9	S-Q	62.8	8	100 SIC	
II-56-40	60.0	30.2	15	83	2	73.7	1.54	15.7	S	55.1	.43	15.0	N	58.7	11	100 SIC	
II-59-91	58.0	25.1	4	91	5	73.0	1.61	16.0	S	53.8	.47	15.5	S	63.8	9	100 SIC	
61-107	13937	60.5	33.9	33	66	1	74.6	1.52	15.8	S	53.5	.44	15.1	S-N	62.8	5	100 SIC
ND 363-1	13828	59.0	30.2	18	79	3	73.8	1.63	16.1	S	56.3	.45	15.3	N-S	63.8	8	100 SIC
ND 478	58.5	30.4	25	73	2	74.2	1.67	16.3	S	55.0	.46	15.7	N-S	65.0	8	100 SIC	
ND 479	58.0	28.9	18	77	5	73.7	1.71	16.2	S	52.6	.47	15.8	S	67.3	5	100 SIC	
Wisc. 261	57.5	25.1	3	90	7	72.8	1.66	16.2	S	55.6	.44	15.7	N	64.4	9	100 SIC	
Wisc. 270	58.0	28.9	9	87	4	73.3	1.62	15.9	S	54.7	.42	15.0	S-Q	64.7	9	100 SIC	
Wisc. 271	58.0	26.1	1	91	8	72.7	1.63	16.0	S	56.7	.44	15.2	N	64.2	10	100 SIC	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, SI - Slightly, C - Close, H - Harsh.

TABLE 21

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES
Madison, Wisconsin

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 Kernel Lg.	Kernel Size Med. Szn.	Pet. Yld.	Wht. Min. Proc. 2/ 2/ 3/ %	Wht. Kern. Char. 2/ 2/ 3/ %	Flr. Ext. 2/ 2/ 3/ %	Min @ 65% Ex. 2/ 2/ 3/ %	Flr. Pro. 4/ 4/ 3/ %	Mfg. Char. 4/ 4/ 3/ %	Mix. Abs. 2/ 2/ 3/ %	Mix. Abs. 2/ 2/ 3/ %	Dough Abs. 2/ 2/ 3/ %	Dough Char. 6/ 6/ 5/ %	Crumb Color 2/ 2/ 2/ %	Crumb Grain 8/ 8/ 8/ %	Loaf Vol. 3/ 3/ 3/ cc.
Chris	13751	61.5	28.5	19	79	2	73.9	1.95	14.9	S	56.3	.55	14.2	N-S	65.7	4	195	
Justin	13462	60.5	31.6	37	61	2	74.8	2.02	15.1	S	57.3	.47	14.2	S-M	66.6	6	204	
Manitou	13775	60.5	26.8	15	84	1	73.7	1.86	15.0	S	56.8	.52	13.3	S-Q	63.2	4	190	
Marquis	3641	54.0	19.1	0	77	23	71.9	2.09	11.7	Q	52.2	.59	10.5	N-S	57.0	3	173	
Selkirk	13100	58.0	30.8	35	61	4	74.6	2.04	13.3	S	60.4	.53	12.5	N	62.5	3	175	
Thatcher	10003	59.0	22.4	1	92	7	72.7	1.95	13.6	S	58.5	.54	12.8	N	62.5	4	186	
RL 4200		60.0	28.6	25	73	2	74.2	1.88	13.3	S	56.6	.54	12.6	N	61.9	3	180	
II-55-11	13773	61.0	33.6	42	55	3	75.0	1.92	14.9	S	55.9	.50	13.4	S-Q	64.2	3	192	
II-55-16		61.0	35.1	49	49	2	75.4	1.86	13.6	S	53.8	.52	12.7	S-N	64.2	3	179	
II-56-40		59.5	30.1	37	60	3	74.7	1.84	12.7	S	56.3	.48	11.3	N	60.3	5	185	
II-59-91		60.0	29.4	36	61	3	74.7	1.92	13.8	S	56.1	.47	12.7	N	62.5	4	195	
61-107	13937	60.0	34.4	43	49	3	75.3	1.84	13.1	S	56.1	.51	12.4	N-W*	60.0	90	S-Q	
ND 363-1	13828	60.0	31.0	51	46	3	75.4	1.94	14.6	S	57.3	.51	13.5	N	63.5	3	187	
ND 478		60.5	31.6	45	51	4	75.1	1.89	14.4	S	59.4	.44	13.4	N-S	64.7	6	198	
ND 479		60.5	32.5	54	43	3	75.6	1.98	14.3	S	56.5	.49	13.3	N	65.0	2	192	
Wisc. 261		60.5	29.8	24	73	3	74.1	1.82	12.9	S	59.6	.42	11.8	N	61.0	4	176	
Wisc. 270		59.5	29.8	21	75	4	73.9	1.91	13.3	S	58.4	.42	12.2	N	60.3	4	185	
Wisc. 271		57.0	28.3	18	73	9	73.5	1.92	11.6	S	57.5	.43	10.6	N-S	57.8	6	186	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, H - Close, H - Harsh.

* M-W SID

TABLE 22

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Laramie, Wyoming

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg. Med. Sm.	Pot. Min. Yld.	Wht. Pro. 2/ 2/	Kern. Char. 3/ 3/	Flr. Ext. 2/ 2/	Min. @ 65° E. Flr. Pro. Char. 2/ 2/	Mlg. P.r. 4/ 4/	Min. Abs. P.t. 2/ 2/	Bake Abs. Time 2/ 2/	Dough Chat. 6/ 6/	Crumb Color 7/ 7/	Crumb Grain 8/ 8/	Loaf Vol. 2/ 2/	Bake Eval. 3/ 3/	cc.
Chris	13751	64.0	32.6	69	29	2	76.4	1.54	12.7	53.7	.46	11.9	N	Q-S	63.5	2	95	S-Q
Justin	13462	63.0	39.8	87	11	2	77.3	1.61	13.1	55.9	.72	12.5	N	S	66.3	4	105	160
Manitou	13775	63.0	34.4	69	29	2	76.4	1.54	12.3	56.2	.43	11.5	N	S	63.2	2	105	S
Marquis	3641	63.0	36.4	69	28	3	76.3	1.54	11.2	53.4	.49	10.4	N	Q-S	61.6	2	100	170
Selkirk	13100	62.0	41.3	75	23	2	77.7	1.65	13.3	57.9	.46	12.6	N	S	64.4	2	105	Q-S
Thatcher	10003	62.5	34.4	67	30	3	76.2	1.57	11.9	53.1	.47	11.2	N	Q-S	63.2	2	105	150
RL 4200	13773	63.0	37.2	75	23	2	76.7	1.65	12.6	55.1	.45	11.8	N	S	63.2	2	110	S
II-55-11	61.0	40.5	71	26	3	76.4	1.58	13.2	53.4	.46	12.4	N	Q-S	65.3	3	105	151	
II-55-16	63.5	41.5	77	19	4	78.7	1.55	12.2	54.8	.44	11.5	N	S	64.4	3	110	157	
II-56-40	63.5	40.8	74	23	3	76.6	1.63	12.4	56.2	.42	11.6	N	S	62.8	2	105	172	
II-59-91	63.0	34.8	68	29	3	76.3	1.55	12.1	56.2	.43	11.3	N	S	63.8	3	105	S-Q	
61-107	13937	62.0	43.9	78	19	3	76.8	1.54	12.2	50.6	.51	11.6	N	Q	61.9	1	105	167
ND 363-1	13828	62.5	38.3	83	14	3	77.0	1.35	12.8	57.9	.41	11.6	N	S	63.2	2	105	S
ND 478	62.5	37.5	81	17	2	77.0	1.66	12.9	56.7	.40	11.7	N	S	67.0	2	105	178	
ND 479	62.0	40.2	87	11	2	77.3	1.65	12.3	52.2	.45	11.6	N	Q	64.7	2	105	S-Q	
Wisc. 261	63.0	38.9	73	24	3	76.5	1.54	11.2	58.2	.40	10.1	N	S	60.7	2	105	169	
Wisc. 270	62.5	41.2	81	16	3	76.9	1.59	11.4	57.3	.37	10.3	N	VS	62.5	2	105	S	
Wisc. 271	62.5	38.9	70	27	3	76.4	1.52	11.3	59.0	.35	10.2	N	VS	61.6	2	105	175	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White, S - Smut.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Hard.

TABLE 23

QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Sheridan, Wyoming

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 Kwt.	Kernel Size Lg. Med. Sm.	Pot. Yield.	Wht. Min. Pro.	Kern. Char.	Flr. Ext.	Min. @ 65% Ex.	Flr. Pro.	Mg. Char. Per.	Mix. Abs. Pat.	Mix. Abs. Pat.	Bake Abs. Pat.	Dough Abs. Pat.	Crumb Char. 2/	Crumb Grain 2/	Loaf Vol. 2/	Bake Eval. 2/
		1/	1/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	cc.	
Chris	13751	62.5	28.6	7	90	3	73.2	1.56	15.6	S	57.5	.40	15.1	N	66.3	4	115 SIC	80 0	209 S
Justin	13462	62.0	32.2	45	53	2	75.2	1.64	16.9	S	56.9	.37	15.8	N	67.0	4	67.0 4-1/4	105 SIC	70 01
Manitou	13775	62.0	27.6	8	90	2	73.3	1.48	15.8	S	57.1	.41	14.9	N	62.8	2	M-S	90 SIC	90
Marquis	3641	63.5	31.0	31	67	2	74.5	1.54	15.4	S	56.5	.41	14.2	N	63.2	2	S-N	110	95
Seikirk	13100	61.0	33.2	35	63	2	74.7	1.56	15.2	S	60.2	.40	14.4	N	64.2	3	M-S	100 SIC	95
Thatcher	10003	62.0	40.5	17	81	2	73.8	1.54	15.4	S	59.3	.42	15.0	N	65.3	2	M-S	105 SIC	90 0
RL 4200	62.0	29.7	14	84	2	73.6	1.52	16.2	S	56.4	.40	15.2	N	64.2	2	M	100 C	90 0	
II-55-11	63.5	35.7	52	45	3	75.5	1.57	15.9	S	59.4	.40	14.9	N	66.3	4	S-M	100 SIC	80 0	
II-55-16	64.0	38.3	67	31	2	76.3	1.44	15.8	S	58.8	.47	14.5	N-S	66.3	4	S-M	105 SIC	80 0	
II-56-40	63.0	34.5	43	55	2	75.1	1.48	16.0	S	59.2	.36	15.8	N	65.3	6	M-S	105 SIC	80 0	
II-59-91	62.0	30.0	18	79	3	73.8	1.47	15.8	S	56.6	.39	14.7	N	65.3	4	S-M	100 SIC	95 S10	
61-107	13937	63.0	37.9	51	46	3	75.4	1.46	15.1	S	57.5	.40	14.7	N	65.0	3	M-S	100	90 I
ND 363-1	13828	62.0	32.2	39	59	2	74.9	1.55	16.0	S	59.4	.38	15.2	N	66.6	5	S-M	105 SIC	90
ND 478	61.0	31.2	35	63	2	74.7	1.67	16.7	S	59.4	.40	15.6	N	67.6	5	M-S	105 SIC	95	
ND 479	61.5	32.5	51	46	3	75.4	1.46	16.1	S	56.7	.37	15.1	S-N	66.3	3	1-3/4	M	110	
Wisc. 261	62.5	30.1	7	90	3	73.2	1.46	14.6	S	61.0	.40	13.9	N	63.2	3	M-W	105 C	95 S10	
Wisc. 270	62.0	32.2	34	63	3	74.6	1.58	14.9	S	59.8	.38	13.4	N	64.7	3	M-S	105 SIC	95	
Wisc. 271	62.0	31.7	9	87	4	73.3	1.54	14.8	S	60.9	.40	13.9	N	63.8	4	M	100 C	95	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Malt, S1 - Slightly, C - Close, H - Harsh.



TABLE 24
AVERAGE OF QUALITY DATA ON UNIFORM REGIONAL NURSERY SAMPLES

Variety or Sel. No.	C. I. No.	T.W. 1/	1000 Kwt.	Kernel Lg.	Size Med.	Pot. Sm.	Wht. Min. 2/	Wht. Pro. 3/	Kern. Ext. 2/	Flr. 65%ES. 2/	Min. g Pro. 4/	Fir. Char. 2/	Mfg. Per. 4/	Mix. Abs. 2/	Mix. Abs. 5/	Bake Time 2/	Dough Char. 6/	Crumb Color 7/	Grain 8/	Loaf Vol. 7/	Bake Gen. Eval. 3/
#/Bu.	g.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	min.	cc.			
Chris	13751	61.5	26.6	19	76	5	73.7	1.62	15.2	58.1	.47	14.6	N	S-Q	64.8	4	S-N	105	90 10	980	
Justin	13462	60.9	30.2	31	65	4	74.4	1.74	15.6	57.9	.44	14.8	N	S	66.1	6	S	100	95 S10	975	
Manitou	13775	60.8	26.4	19	75	6	73.7	1.62	15.3	58.2	.45	14.4	N	S	63.5	4	S	100	90	990	
Marquis	3641	59.9	26.1	15	76	9	73.4	1.68	14.1	S-Q	.55	.48	13.2	N-S	62.6	4	S-N	105	90 01	920	
Selkirk	13100	59.0	35.3	5	70	5	74.0	1.67	14.5	S	.59	.45	13.9	N	S	63.9	4	S-N	100	90 1	950
Thatcher	10003	60.4	26.1	12	81	7	73.3	1.63	14.7	S-Q	.57	.49	13.9	N	S-Q	63.4	4	S-N	105	90 10	960
RL 4200	61.1	29.1	25	72	3	74.1	1.63	15.2	S	.56	.49	14.4	N	S-Q	63.5	3	S-N	105	S1C 90	1100 Q-U 1	
II-55-11	13773	62.6	34.2	37	60	3	74.7	1.63	15.0	S	.57	.48	14.1	N	S	64.5	5	S	110 W	95 S10	1105 S 4
II-55-16	62.8	35.1	40	55	5	74.8	1.58	14.5	S	.56	.49	13.6	N	Q-S	64.6	4	S	110 S1C	90 1	1020 S-Q 2	
II-56-40	61.4	32.3	31	65	4	74.4	1.60	14.5	S	.57	.49	13.8	N	S	62.6	8	S	110	95 S11	1040 Q 3	
II-59-91	60.6	28.0	21	74	5	73.8	1.63	14.7	S	.56	.46	13.8	N-S	Q-U	64.9	6	S	105	90 10	960	
61-107	13937	61.1	35.5	42	54	4	74.9	1.56	14.7	S	.56	.44	14.2	N-S	64.1	4	S-N	110	90 1	970 Q-S 1	
ND 365-1	13828	60.7	31.5	37	59	4	74.7	1.68	15.4	S	.58	.45	14.5	N	S	65.2	6	S	100	80 10	1010 S-Q 3
ND 478	60.1	31.0	35	62	3	74.6	1.71	15.6	S	.58	.44	14.9	N-S	S-Q	66.8	6	S	105	95 S10	1100 S 3	
ND 479	60.5	31.5	39	58	3	74.8	1.67	15.1	S	.56	.44	14.4	N-S	Q	66.5	4	S	100	90 0	1050 U-Q 1	
Wisc. 261	60.7	28.4	17	75	8	73.5	1.61	14.4	S	.58	.42	13.6	N-S	S-Q	63.7	6	S	100 S1C	90	1010 Q-S 2	
Wisc. 270	60.2	30.4	25	70	5	74.0	1.63	14.5	S	.57	.41	13.5	N-S	Q-S	64.7	7	S	110	90	1150 Q-S 2	
Wisc. 271	60.2	28.6	21	73	6	73.8	1.62	14.5	S	.58	.42	13.6	N	S-Q	63.7	7	S	100	90 1	980 S-Q 3	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, S2 - Close, H - Harsh.

9/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise.

TABLE 25
QUALITY DATA ON UNIFORM REGIONAL NURSERY STATE AVERAGES

Variety or Sel. No.	C. I. No.	T. W. $\frac{1}{4}$ /Bu.	1000 Kwt.	Kernel Size $\frac{1}{4}$ /	Pot. Min. Yld.	Wt. Min. $\frac{1}{2}$ /	Flr. E.L. $\frac{2}{2}$ /	Min. $\frac{1}{2}$ /Ex. $\frac{2}{2}$ /	Fir. Pre. $\frac{2}{2}$ /	Mix. Abs. $\frac{2}{2}$ /	Bake Abs. $\frac{2}{2}$ /	Mix. Time $\frac{2}{2}$ /	Dough Char. $\frac{2}{2}$ /	Crumb Color $\frac{2}{2}$ /	Leaf Grain Vol.		
Chris	13751	63.8	30.3	40	58	2	75.0	1.63	13.7	58.5	.46	13.0	62.4	3	114	85	
Justin	13462	62.4	31.6	42	55	3	75.0	1.99	13.5	59.0	.44	12.8	63.1	7	106	93	
Selkirk	13100	60.5	31.7	37	59	4	74.7	1.79	13.0	59.8	.45	12.3	61.6	4	4-1/4	104	
<u>MINNESOTA STATIONS</u>																cc.	
Chris	13751	59.3	21.5	1	84	15	72.3	1.74	16.5	58.3	.52	15.3	65.8	5	62.4	114	85
Justin	13462	58.8	25.1	6	86	8	72.9	1.75	16.6	56.9	.47	15.7	67.5	6	5-1/4	106	93
Selkirk	13100	55.7	23.7	2	82	16	72.3	1.74	15.5	58.3	.48	14.9	65.7	5	4-3/4	104	94
<u>MONTANA STATIONS</u>																cc.	
Chris	13751	60.7	24.8	11	84	5	73.3	1.45	16.4	59.0	.44	15.3	66.2	5	62.4	114	85
Justin	13462	60.9	30.0	29	68	3	74.4	1.53	16.4	58.6	.40	15.7	67.7	7	5-3/4	108	94
Selkirk	13100	59.5	30.6	21	75	4	74.2	1.47	15.1	60.4	.41	14.7	65.0	5	5-1/4	107	93
<u>NORTH DAKOTA STATIONS</u>																cc.	
Chris	13751	60.8	26.4	6	91	3	73.2	1.73	16.4	57.8	.53	16.1	63.0	4	62.4	114	85
Justin	13462	59.8	29.0	18	79	3	73.7	1.87	16.5	56.9	.50	15.8	64.9	6	5-1/2	108	94
Selkirk	13100	57.2	29.0	8	88	4	73.3	1.81	15.6	57.9	.51	14.7	63.2	4	4-1/2	107	93
<u>SOUTH DAKOTA STATIONS</u>																cc.	
Chris	13751	61.5	28.5	19	79	2	73.9	1.95	14.9	56.3	.55	14.2	65.7	4	62.4	114	85
Justin	13462	60.5	31.6	37	61	2	74.8	2.02	15.1	57.3	.47	14.2	66.6	4	5-3/4	108	94
Selkirk	13100	58.0	30.8	35	61	4	74.6	2.04	13.3	60.4	.53	12.5	62.5	3	3-1/2	107	93
<u>WISCONSIN STATION</u>																cc.	
Chris	13751	63.3	31.6	38	60	2	74.8	1.55	14.2	55.1	.43	13.5	64.9	3	62.4	114	85
Justin	13462	62.5	36.0	66	32	2	76.0	1.62	15.0	56.4	.39	14.2	66.7	4	5-3/4	108	94
Selkirk	13100	61.5	37.3	55	43	2	75.7	1.60	14.0	59.1	.43	13.5	64.3	3	2-3/4	107	93
<u>WYOMING STATIONS</u>																cc.	
Minnesota	62.2	31.2	40	57	3	74.9	1.82	13.4	59.1	.45	12.7	62.4	5	62.4	114	85	
Montana	57.9	23.4	3	84	13	1.74	72.5	1.74	16.2	57.8	.49	15.3	66.3	5	62.4	114	85
North Dakota	60.4	28.5	20	76	4	74.0	1.48	16.0	59.3	.42	15.2	66.3	6	5-1/2	108	94	
South Dakota	59.3	28.1	11	86	3	73.4	1.80	16.2	57.5	.51	15.5	63.7	5	4-1/2	105	93	
Wisconsin	60.0	30.3	30	67	3	74.4	2.00	14.4	58.0	.52	13.6	64.9	3	4-1/4	105	93	
Wyoming	62.5	35.0	53	45	2	75.5	1.59	14.4	56.9	.42	13.7	65.3	3	3	106	94	
1967 Averages $\frac{1}{2}$	60.4	29.4	26	69	5	74.1	1.74	15.1	58.1	.47	14.3	64.8	5	62.4	114	85	
1966 Averages $\frac{1}{2}$	58.0	27.1	20	72	8	73.6	1.88	16.6	60.6	.50	16.0	66.2	5	5-3/4	108	94	

$\frac{1}{2}$ / Clean dry - subtract 1#/Bu. for dockage-free T.W.

$\frac{1}{4}$ / 14% moisture basis.

$\frac{3}{4}$ / Refer to Reference Mixograms for numerical curve pattern.

$\frac{4}{4}$ / B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead.

Averages obtained by using data for Minnesota, Montana, North Dakota, South Dakota, Wisconsin, and Wyoming.

TABLE 27

QUALITY DATA ON SAMPLY YIELD NURSERY SAMPLES

Helvete, Montana

1967 C30^a

Variety or Sel. No.	C. I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg. Med. Sm.	Por. 2/	Wht. Min. 2/	Kern. Pro. 2/	Flr. Ext. 2/	Min. 3/ Flr. 65%Ex. 2/	Flr. Pro. 2/	Mig. Char. 4/	Mig. Per. 3/	Min. Abs. 2/	Bake Abs. 2/	Min. Pat. 2/	Dough Abs. 2/	Crumb Char. 6/	Crumb Color 7/	Grain 8/	Loaf Vol. 8/	Bake Evap. 2/
		#/Bu.	g.	%	%	%	%	%	%	%	%	%	%	%	%	%	%	min.	cc.		
Chinook	13220	58.5	22.0	0	80	20	72.0	1.74	17.6	S	.50	16.9	N	67.0	6	67.0	5	90 SIG	80 0	192	S
Cypress	13444	59.0	18.2	0	47	53	70.4	1.85	18.8	Q-S	.55	18.2	N	69.1	8	69.1	6-3/4	80 SIG	70 0	211	S-Q
Fortuna	13596	59.0	26.2	2	89	9	72.7	1.69	17.8	S	.53	17.4	N	66.6	6	66.6	5	25 SIG	80 1	212	S
Rescue	12435	56.0	16.9	0	40	60	70.0	1.89	18.9	Q-S	.58	18.0	N	69.4	8	69.4	9	30 SIG	70 0	213	S-Q
Sawtana	13304	58.0	19.0	0	64	36	71.2	1.82	19.1	S-Q	.54	17.3	N	67.9	6	67.9	5-1/2	80 SIG	90 0	200	S
Thatcher	10003	55.5	18.0	0	67	33	71.4	1.87	18.7	Q-S	.56	17.7	N	67.0	5	67.0	4-3/4	90 SIG	70 0	211	S-Q
QLS-201	55.0	19.5	0	75	25	71.8	1.75	18.1	Q	.54	17.5	N	68.8	10	68.8	11-3/4	90 SIG	95	202	S	
QSF-224-3A	56.0	17.7	0	50	50	70.5	1.89	18.6	S-Q	.57	17.9	N	68.5	6	68.5	4-1/4	95 SIG	80 0	231	S	
Q72-5-35	56.0	22.0	0	87	13	72.4	1.98	19.7	S-Q	.56	17.6	N	70.3	7	70.3	6	95 SIG	90	191	S	
7169-393	55.5	18.4	0	52	48	70.6	1.84	19.1	S-Q	.57	17.3	N	70.7	8	70.7	6	90 SIG	70 0	195	S-Q	
7530-433	58.0	21.5	0	84	16	72.2	1.78	18.1	S	.58	17.2	N	67.9	7	67.9	7-1/2	90 SIG	80 0	203	S	
7530-445	58.5	21.5	0	85	15	72.3	1.74	17.7	S	.57	16.9	N	66.3	5	66.3	3-3/4	85 SIG	90	199	S	
7169-88	58.0	21.8	0	74	26	71.7	1.75	18.8	S-Q	.58	18.0	N-S	70.5	6	70.5	5-3/4	100 C	88 0	190	S	
752-2	57.0	17.4	0	48	52	70.4	1.93	19.1	S-Q	.57	18.3	N	70.0	6	70.0	5	95 VC	70 0	196	S-Q	
7530-436	62.0	23.3	2	92	6	72.8	1.68	17.1	S	.57	16.2	N	64.2	5	64.2	4-3/4	105 VC	70 0	181	S	
MT 6669	57.0	19.1	0	68	32	71.4	1.79	17.4	S-Q	.57	16.4	N	67.0	8	67.0	8-1/2	95 VC	80 0	192	S	
MT 6671	60.0	22.4	0	85	15	72.3	1.72	17.0	S	.51	15.9	N	65.3	7	65.3	6-1/4	100 C	90 0	188	S	
MT 6679	58.0	22.4	1	85	14	72.4	1.74	17.4	S	.55	16.3	N	65.7	8	65.7	7-1/4	95 C	85 0	193	S	
S6529	56.5	21.9	0	82	18	72.1	1.85	19.7	Q	.58	19.4	N	68.5	6	68.5	4-1/2	90 DC	90 0	195	S	
S6535	55.5	23.3	0	84	16	72.2	1.66	17.9	S	.56	17.4	N-S	66.6	8	66.6	7-1/2	100 VC	90 0	209	S	
S6579	56.0	23.5	0	84	16	72.2	1.62	17.9	S	.57	17.5	N-S	67.9	8	67.9	7	95 VC	85 0	215	S	
S6589	58.0	24.3	0	38	12	72.4	1.73	17.8	S	.54	17.1	N-S	66.0	6	66.0	5-1/2	110 VC	90 1	215	S	
61-107	13937	57.0	25.4	0	90	10	72.5	1.71	17.6	S	.45	17.3	N	66.0	6	66.0	5-1/2	105 C	70 10	220	S-Q

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ 0 - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Harsh.

TABLE 28

QUALITY DATA ON SAMPLEY YIELD NURSERY SAMPLES

Sidney, Montana

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. Rwt. 1/	1000 Kwt. 1/	Kernel Lg. Med. Sm.	Size Pot. Min. Yld. 2/ 2/ 2/	Wt. Kern. Pro. Char. 3/ 2/ 2/	Flr. Ext. 2/ 2/ 2/	Min @ 65% Es. Flr. 2/ 2/ 2/	Flr. Pro. Char. 2/ 2/ 2/	Mfg. Abs. Per. 3/ 2/ 2/	Mix. Abs. Pat. 2/ 2/ 2/	Bake Abs. Time 2/ 2/ 2/	Mix. Abs. Time 2/ 2/ 2/	Bake Abs. Time 2/ 2/ 2/	Dough Char. 6/ 6/ 6/	Crumb Color 7/ 7/ 7/	Crumb Grain 8/ 8/ 8/	Loaf Vol. 1/3/ 1/3/ 1/3/	Bake Eval. c.c.
Chinook	13220	62.5	26.2	2	94	4	72.9	1.47	14.9	S	59.2	.38	14.2	N	63.5	5	105 S1C	95 C	164 S-Q
Cypress	13344	62.5	24.6	1	92	7	72.7	1.64	16.7	S	56.9	.44	16.0	N	67.0	6	67.0 5-3/4	95 S1C	194 S
Fortuna	13596	62.0	33.8	13	84	3	73.5	1.54	15.0	S	59.2	.40	14.3	N	63.2	5	63.2 4-3/4	100 S1C	177 S
Rescue	12435	61.5	23.6	1	92	7	72.7	1.57	14.7	S	58.5	.41	13.7	N	62.8	6	62.8 6-1/2	105 C	174 S
Sawtana	13304	61.5	24.4	0	92	8	72.6	1.59	14.8	S	60.8	.43	14.3	N	65.0	5	65.0 4-1/2	100 S	178 S
Thatcher	10003	60.5	23.4	1	92	7	72.7	1.60	15.5	S	58.0	.42	14.9	N	63.2	5	63.2 4-1/4	100 N-S	179 S
QLS-201	61.0	30.8	18	78	4	73.7	1.52	14.5	S	55.7	.45	13.9	N	65.7	6	65.7 6-3/4	95 M-S	179 S	
QSF-254-3A	60.0	23.6	1	86	13	72.4	1.70	15.7	Q	56.4	.44	15.0	N	64.7	5	64.7 4-1/4	100 S	195 Q-S	
Q72-5135	60.0	29.0	9	85	6	73.2	1.70	15.9	S	58.5	.47	15.4	N	67.0	6	67.0 5-3/4	90 T	168 Q	
7169-293	61.5	28.5	2	94	4	72.9	1.53	15.5	S	55.5	.40	14.9	N-S	66.6	6	66.6 6-1/4	90 OT	180 Q	
7530-433	61.5	29.3	7	89	4	73.2	1.52	15.0	S	59.4	.36	14.4	N	64.2	6	64.2 6-1/4	105 M-S	105 S	
7530-445	62.0	28.5	14	82	4	73.5	1.48	15.0	S	58.5	.38	14.0	S	62.5	4	62.5 4-1/4	100 S	177 S	
7169-88	62.0	28.7	2	94	4	72.9	1.52	15.1	S	56.9	.36	14.5	N-S	65.7	5	65.7 5-1/2	105 S1C	177 Q-S	
7532-2	62.0	23.8	1	92	7	72.7	1.60	15.9	S	59.0	.41	15.0	N	64.7	4	64.7 3-3/4	105 S-M	164 Q-S	
7530-36	63.0	28.1	20	77	3	73.9	1.57	15.8	S	58.0	.44	15.2	N	63.5	4	63.5 4-1/4	105 S-M	172 Q	
MT 6669	61.5	26.3	3	92	5	72.9	1.47	14.1	S	56.9	.39	13.0	N	63.2	5	63.2 5-1/4	100 S-M	166 S	
MT 6671	62.5	28.6	1	95	4	72.9	1.51	15.3	S	59.0	.38	14.1	N	62.8	4	62.8 4-1/2	90 T	162 Q	
MT 6679	61.0	26.5	2	93	5	72.9	1.58	15.6	S	55.9	.40	14.4	N	66.3	6	66.3 6-3/4	90 I	162 Q	
S6229	59.0	29.2	7	87	6	73.1	1.56	16.0	S-Q	59.5	.40	15.2	S	66.6	5	66.6 5-1/2	100 I	181 S	
S6555	60.0	29.7	6	89	5	73.1	1.34	15.3	S	56.3	.39	14.8	N-S	66.3	6	66.3 6	105 C	169 S	
S6579	59.5	31.8	7	88	5	73.1	1.55	15.3	S	57.3	.39	15.0	N	66.3	6	66.3 5-3/4	95 C	169 Q	
S6589	61.5	31.7	11	86	3	73.4	1.49	15.1	S	56.3	.44	14.0	N	64.2	5	65.7 4-1/4	95 TH	165 Q	
61-107	13337	60.5	31.2	9	87	4	73.3	1.52	16.2	S	57.1	.41	15.4	N	65.7	4	65.7 4-1/4	95 S	165 Q-S

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Close, H - Harsh.



TABLE 29

QUALITY DATA ON SAMPLY YIELD NURSERY SAMPLES

Fargo, North Dakota

1967 CRO?

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 #/Bu.	Kernel Size			Pot. Yld.	Wht. Min. 2/	Wht. Pro. 2/	Kern. Char. 1/	Flr. Ext. 2/	Min. @ 65% Ex. 2/	Flr. Pre. 2/	Mlg. Char. 4/	Mlg. Per. 3/	Mix. Abs. 2/	Mix. Pat. 5/	Bake Abs. 2/	Bake Time min. 7/	Dough Char. 6/	Crumb Color. 7/	Crumb Grain 8/	Loaf Vol. 8/	Bake Erl. 3/	cc.	
				%	%	%																				
Chinook	13220	63.0	30.3	13	86	1	73.6	1.56	14.0	S	60.7	.37	13.2	N	S	62.8	3	62.8	3-1/4	M	95	C	95	C	171	S-Q
Cypress	13344	62.5	28.2	5	91	1	73.1	1.58	14.1	S-Q	59.4	.37	13.2	N	S	63.2	4	63.2	4	M	110	VC	95	C	177	S
Fortuna	13596	64.0	41.0	61	38	1	76.0	1.44	14.4	VS	61.8	.35	13.3	N	S	62.3	3	62.3	3-1/4	M	105	C	95	C	170	S
Rescue	12435	63.0	27.5	4	92	4	73.0	1.67	14.9	S-Q	60.2	.38	13.8	N	S	62.3	3	62.3	4-1/2	M-S	110	VC	95	C	169	S
Sawtana	13304	63.0	26.4	6	90	4	73.1	1.68	14.5	S-Q	62.3	.42	13.3	N	S-Q	62.5	3	62.5	4	M-S	110	C	95	C	169	S
Thatcher	10003	62.5	27.8	7	91	2	73.3	1.54	14.8	S	59.9	.37	13.5	N	S	61.3	2	61.3	2-1/2	M	115	SIC	95	S	186	S
QLS-201	62.5	31.7	36	62	2	74.7	1.54	14.2	S	57.5	.40	13.0	N	S-Q	63.5	4	63.5	5	M	110	SIC	95	S	174	S	
QSF-234-2A	63.0	28.4	4	94	2	73.1	1.66	14.0	S-Q	58.3	.39	12.8	N	S-Q	60.3	2	60.3	3	M	105	SIC	95	S	184	S-Q	
Q72-5135	63.0	32.9	49	50	1	75.4	1.61	15.0	S	59.9	.42	14.3	N	S-Q	64.7	4	64.7	4-1/2	S-M	100	SIC	95	S	173	S	
7169-293	62.0	28.8	5	92	3	73.1	1.59	13.8	S	56.7	.35	12.7	N-S	Q	61.9	5	61.9	5-1/2	M	110	C	95	S10	181	S	
7530-433	64.0	34.6	50	48	2	75.4	1.54	13.6	VS	59.9	.35	12.5	N	S	62.3	3	62.3	3-1/4	M	110	SIC	90	01	170	S	
7530-445	64.0	32.6	43	56	3	75.0	1.50	14.4	VS	59.7	.35	13.2	N	S	61.9	2	61.9	2-1/2	M-S	115	SIC	92	0	185	Q-S	
7530-445	64.0	29.5	10	88	2	73.4	1.49	12.6	S	58.3	.33	11.6	N-S	Q	61.0	3	61.0	4	M	110	SIC	95	C	160	Q-S	
7169-88	63.5	27.9	3	96	1	73.1	1.58	14.0	S-Q	59.4	.36	13.0	N	S	61.9	3	61.9	2-3/4	M	105	SIC	90	S	175	S-Q	
7532-2	64.0	30.0	41	50	1	75.0	1.60	14.6	S	57.1	.47	13.0	N	Q	61.9	3	61.9	3-1/4	M-S	120	C	95	S	162	S-Q	
7530-436	63.5	31.0	41	56	3	73.2	1.48	11.2	S	55.5	.41	9.9	N-S	U	58.1	2	58.1	3-3/4	S1D	115	SIC	95	C	159	U	
MT 6669	62.5	28.4	7	89	4	73.2	1.48	11.2	S	58.8	.35	10.6	N	S-Q	58.1	2	58.1	3	M	110	SIC	105	S10	162	Q	
MT 6671	63.5	30.0	13	85	2	73.6	1.47	11.8	S	56.6	.37	12.0	N	Q	60.3	4	60.3	4	M	100	95	C	160	S-Q		
MT 6679	64.0	34.2	43	56	1	75.1	1.43	13.1	S	60.4	.36	14.2	N	S	63.2	3	63.2	3-1/4	S-M	115	92	01	172	S-Q		
S5529	63.0	35.2	38	62	0	74.9	1.50	15.0	S	59.0	.34	12.9	N	S	62.5	5	62.5	4-1/2	M	110	SIC	95	C	165	S	
S6555	64.0	40.3	66	33	1	76.3	1.40	14.0	VS	56.6	.38	13.8	N	S-Q	63.2	3	63.2	4	M	120	SIC	95	C	165	S-Q	
S6579	63.5	39.7	64	35	1	76.2	1.37	13.9	VS	59.9	.33	13.1	N	VS	63.2	4	63.2	4	M	115	SIC	95	C	163	S	
S6589	64.5	38.5	60	40	0	76.0	1.46	14.5	VS	56.6	.41	13.2	N	S	62.8	3	62.8	2-3/4	M	120	SIC	95	C	165	S-Q	
61-107	13937	64.0	40.8	69	30	1	76.4	1.40	14.6	VS	56.6	.38	13.8	N	S-Q	63.2	3	63.2	2-1/2	M-S	120	95	C	165	S-Q	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

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2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Harsh.



TABLE 30

QUALITY DATA ON SANITELY YIELD NURSERY SAMPLES

Williston, North Dakota

1967 CROP

Variety or Sel. No.	C. I. No.	T.W. Kwt.	1000 Kernel Lg.	Size Ned. Sm.	Pot. Yld.	Wt. Min. 2/	Wt. Pro. 2/	Kern. Char. 3/	Flr. Ext. 2/	Min. @ 65°Ex. 2/	Flr. Pro. 2/	Mlg. Char. 3/	Mix. Abs. 2/	Bake Pat. 5/	Min. Abs. 2/	Dough Abs. 2/	Crumb Color 7/	Crumb Grain 8/	Loaf Vol. 7/	Bake Vol. 8/	Bake Vol. 3/	cc.
Chinook	13220	61.0	26.1	6	89	5	73.1	1.45	16.7	S	57.1	.37	15.8	N	66.3	5	66.3	4-3/4	S-M	105 SIC	95	
Cypress	13344	60.0	25.6	3	92	5	72.9	1.47	16.9	S	55.0	.40	16.0	N-S	66.3	6	66.3	6-1/4	S	95 C	90	
Fortuna	13596	60.0	34.8	28	69	3	74.3	1.43	16.2	VS	56.1	.41	15.9	N	65.0	4	65.0	4-1/4	S	95 C	80	
Rescue	12435	59.5	23.6	1	92	7	72.7	1.48	17.2	S	54.5	.41	16.2	N-S	66.0	7	66.0	7-1/2	N	95 C	80	
Sawtana	13304	59.5	22.8	1	90	9	72.6	1.51	17.2	S-Q	58.7	.42	16.5	N	65.7	7	65.7	7-3/4	N	90 C	85	
Thather	10003	58.0	22.1	1	88	11	72.5	1.44	16.5	S-Q	55.9	.43	16.0	N	63.5	4	63.5	4-1/4	S	67.0	8	
QLS-201	58.5	25.4	4	86	10	72.7	1.46	16.3	S	54.2	.47	15.6	N	67.0	8	67.0	11	S	95 C	95		
QSF-254-2A	57.5	21.0	1	83	16	72.3	1.57	17.1	S-Q	54.2	.43	16.4	N-S	66.0	5	66.0	4-1/2	S	95 SIC	197		
Q72-5135	57.5	26.0	6	88	6	73.0	1.66	18.1	Q-S	56.1	.50	17.9	N	68.8	6	68.8	7-1/4	N	100 SIC	179		
7169-293	59.0	26.2	3	92	5	72.9	1.41	17.0	S	54.8	.39	16.4	N-S	67.9	6	67.9	6-1/4	M	105	70		
7530-433	59.5	25.8	3	90	7	72.8	1.53	16.9	S	58.8	.40	16.0	N	67.6	7	67.6	8-1/2	S	110 C	75		
7530-445	61.5	27.3	8	88	4	73.2	1.41	16.2	S	57.6	.43	16.0	N	65.0	4	65.0	4	S	105 SIC	90		
7169-88	60.5	28.3	7	90	3	73.2	1.41	17.2	S	56.9	.41	16.7	N-S	67.0	5	67.0	4-1/2	S	100 C	85		
7532-2	60.0	23.4	1	88	11	72.5	1.51	17.3	S	58.3	.41	16.9	N	67.0	5	67.0	4-1/2	S	100 C	85		
7530-436	62.0	27.0	10	86	4	73.3	1.48	17.0	S	57.3	.44	16.4	N	64.7	5	64.7	4-3/4	S	100 C	90		
MT 6669	60.0	18.3	2	88	10	72.6	1.47	16.1	Q-S	56.1	.41	15.1	N-S	64.7	7	64.7	7	S	100 SIC	95		
MT 6671	61.5	25.8	2	92	6	72.8	1.41	16.2	S	57.1	.39	15.2	N	65.3	6	65.3	6-3/4	S-M	105 SIC	95		
MT 6679	60.5	27.0	7	88	5	73.1	1.37	16.4	S	54.5	.40	15.1	N	64.7	7	64.7	6-3/4	S	100 SIC	95		
S6529	56.5	25.6	3	91	6	72.9	1.43	17.4	Q-S	57.1	.41	16.7	N	66.3	5	66.3	6-1/4	S	95 C	80		
S6555	58.0	28.1	4	91	5	73.0	1.29	16.2	S	55.7	.40	16.0	N-S	66.3	7	66.3	7-1/2	S	95 C	90		
S6579	58.0	27.2	3	91	6	72.9	1.29	16.1	S	57.1	.40	15.9	N	65.7	7	65.7	7-1/2	S	100 C	95		
S6589	60.5	31.2	11	86	3	73.4	1.41	16.5	S	55.9	.44	16.2	N	66.3	5	66.3	5-1/4	S	105 SIC	90		
61-107	13937	59.5	31.4	16	81	3	73.7	1.49	16.9	S	57.3	.40	16.5	N	66.6	5	66.6	5-1/4	S	105 SIC	90	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Close, H - Harsh.



TABLE 31

QUALITY DATA ON SAWFLY WEEVIL NURSERY AVERAGES

Variety or Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Ig. Med. Sm.	Pot. Yield 2/	Wht. Min. Pro. 2/	Kern. Pro. 3/	Flr. Ext. 2/	Min. @ 65% Es. 4/	Flr. Pro. 2/	Mg. Char. 4/	Mix. Abs. 2/	Bake Abs. 2/	Dough Abs. 2/	Crumb Coler. 2/	Crumb Grain 2/	Loaf Vol. 2/	Bake Gen. Eval. 3/	Gen. 2/
Chinook	13320	61.1	27.2	8	85	7	73.1	1.58	15.3	N	S	64.0	4	64.0	4	M-S	103	92	171 S-Q
Cypress	13444	60.8	24.7	3	82	15	72.4	1.61	16.0	S-Q	56.2	4.5	65.6	5	S-M	98	89	190 S	
Fortuna	13396	61.0	34.7	30	67	3	74.3	1.49	15.4	VS	58.0	4.2	64.8	N	S-M	97	89	186 S	
Rescue	12435	59.8	24.2	3	80	17	72.4	1.61	15.6	S-Q	57.6	4.3	64.8	N	S	64.1	5	64.1 6-1/4 N-S 102 84 186 S-Q	
Sawanna	13304	60.2	24.3	2	86	12	72.5	1.60	15.9	S-Q	59.7	.45	14.9	N	S	64.5	5	M-S 97 92 161 :	
Thatcher	10003	59.0	23.9	4	85	11	72.6	1.60	15.9	S-Q	57.0	.45	15.0	N	S-Q	63.0	4	63.0 3-1/4 M-S 103 86 192 S-Q	
QLS-201	59.3	28.0	19	72	9	73.5	1.52	15.5	S	55.3	.47	14.7	N	Q	65.9	6	65.9 7-3/4 S-M 101 95 189 S-Q 2		
QSF-254-3A	59.0	23.6	2	81	17	72.3	1.69	16.1	S-Q	55.9	.45	15.1	N	S-Q	63.9	4	63.9 3-1/2 S-M 98 84 206 S-Q 2		
Q72-5135	58.9	28.5	21	74	5	73.8	1.69	16.8	S-Q	57.6	.49	16.0	N	S-Q	67.0	5	67.0 5-1/2 S-M 97 88 180 S-Q 2		
7169-293	59.5	26.4	5	82	13	72.6	1.53	16.1	S-Q	55.6	.40	15.5	N-S	Q	66.1	6	66.1 5-1/2 M-S 103 84 191 S-Q 2		
7530-433	60.2	28.9	21	73	6	73.7	1.56	15.7	S	58.9	.40	14.8	N	S	64.6	5	64.6 5-1/2 S-M 105 86 189 S-Q 3		
7530-445	61.1	28.7	22	73	5	73.8	1.52	15.6	S	58.0	.41	14.8	N	S	63.2	3	63.2 3-1/4 M-S 105 91 189 S-Q 3		
7169-288	60.7	28.5	8	85	7	73.0	1.50	15.8	S	57.1	.38	15.1	N-S	S-Q	65.7	4	65.7 4-1/2 N-S 106 90 183 S-Q 3		
7532-2	60.5	24.6	3	82	15	72.4	1.63	16.4	S-Q	58.1	.42	15.6	N	S	65.2	4	65.2 3-1/2 S-M 104 83 186 S-Q 2		
7530-436	61.9	27.9	19	77	4	73.8	1.5	16.2	S-Q	57.0	.46	15.3	N	S-Q	63.4	4	63.4 3-3/4 S-M 110 91 175 S-Q 2		
MT 6669	60.2	24.7	9	80	11	72.9	1.56	14.2	S-Q	55.8	.43	13.0	N-S	Q-S	62.4	5	62.4 5-1/4 S-M 100 90 171 Q-S 2		
MT 6671	61.5	27.2	10	84	6	73.2	1.55	14.8	S	57.9	.41	13.6	N	S	62.2	4	62.2 4-1/2 S-M 103 95 169 Q-S 2		
MT 6679	60.6	28.5	19	75	6	73.7	1.53	15.5	S	54.9	.43	14.2	N-S	Q	63.5	5	63.5 5-1/2 S-M 97 90 173 S-Q 1		
\$65329	58.1	28.0	13	80	7	73.3	1.58	16.5	S-Q	58.2	.43	15.8	N	S	65.2	4	65.2 4-1/2 S-M 98 88 189 S-Q 3		
\$65555	59.2	31.0	23	71	6	73.9	1.42	15.3	S	56.8	.40	14.8	N-S	S-Q	64.4	6	64.4 5-3/4 S-M 106 92 182 S 3		
S6579	59.2	31.3	23	71	6	73.9	1.45	15.4	S	57.9	.40	15.0	N	S	65.3	6	65.3 5-1/2 S-M 102 88 189 S-Q 3		
S6589	60.7	32.1	26	70	4	74.1	1.51	15.6	S-VS	55.7	.46	14.8	N-S	Q-S	64.2	4	64.2 4 M-S 108 93 183 S-Q 2		
61-107	13937	60.0	33.0	28	68	4	74.2	1.49	15.7	VS-S	57.0	.41	15.2	N	S	64.6	4	64.6 4 M-S 108 89 186 S-Q 3	

1/ Clean dry - subtract 1#/Bu. for dockage-free T.W.

2/ 14% moisture basis.

3/ S - Satisfactory, Q - Questionable, U - Unsatisfactory, V - Very.

4/ N - Normal, H - Hard, S - Soft.

5/ Refer to Reference Mixograms for numerical curve pattern.

6/ B - Bucky, S - Strong, M - Mellow, W - Weak, D - Dead, V - Very.

7/ C - Creamy, G - Gray, D - Dull, S1 - Slightly, V - Very, B - Bright, W - White.

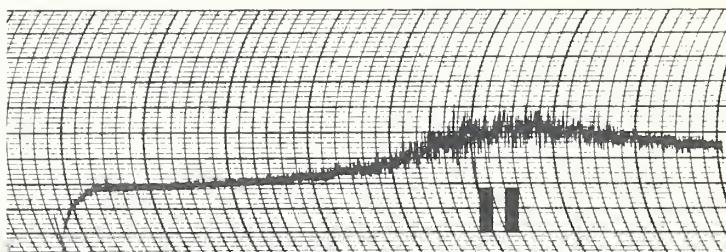
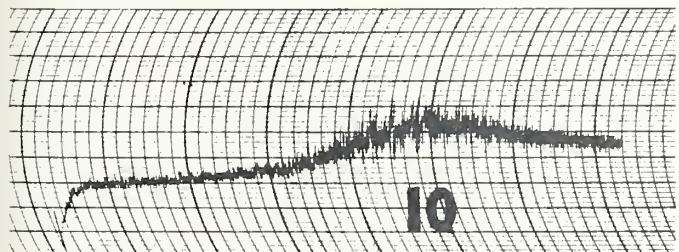
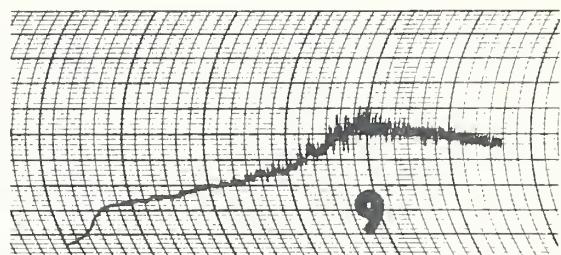
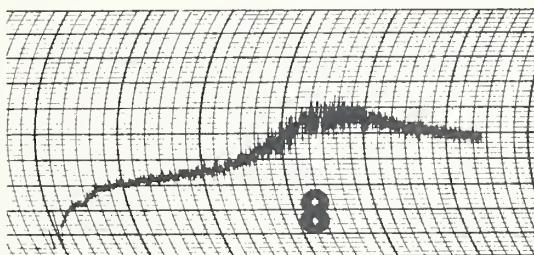
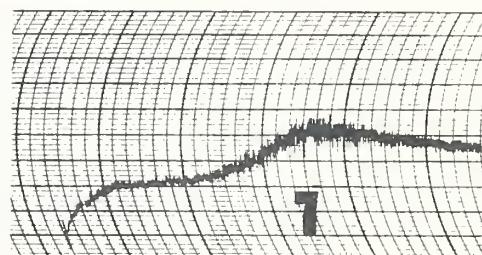
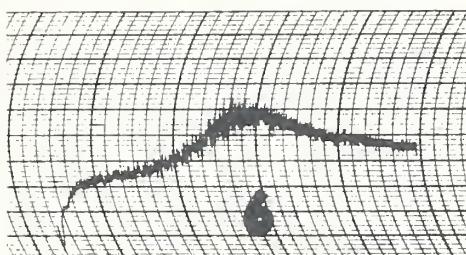
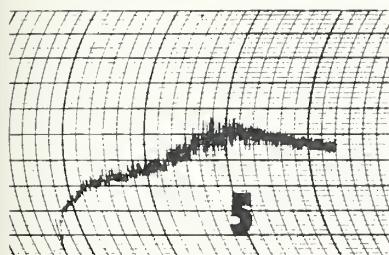
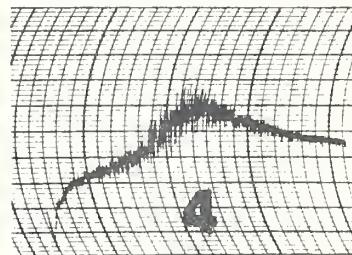
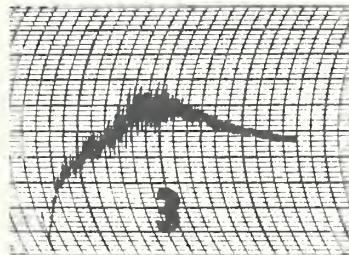
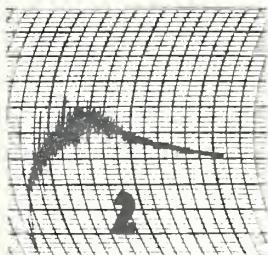
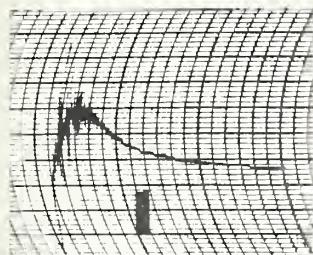
8/ O - Open, I - Irregular, S - Soggy, T - Thick Wall, S1 - Slightly, C - Close, H - Harsh.

1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise.



REFERENCE MIXOGRAMS

HARD RED SPRING WHEAT



U.S.D.A. SPRING WHEAT QUALITY LABORATORY

FARGO, NORTH DAKOTA





